

American Artisan and Hardware Record

Sheet Metal—Roofing—Warm Air Furnaces—Stoves

Vol. 93, No. 8

CHICAGO, FEBRUARY 19, 1927

\$2.00 Per Year

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**WARM AIR
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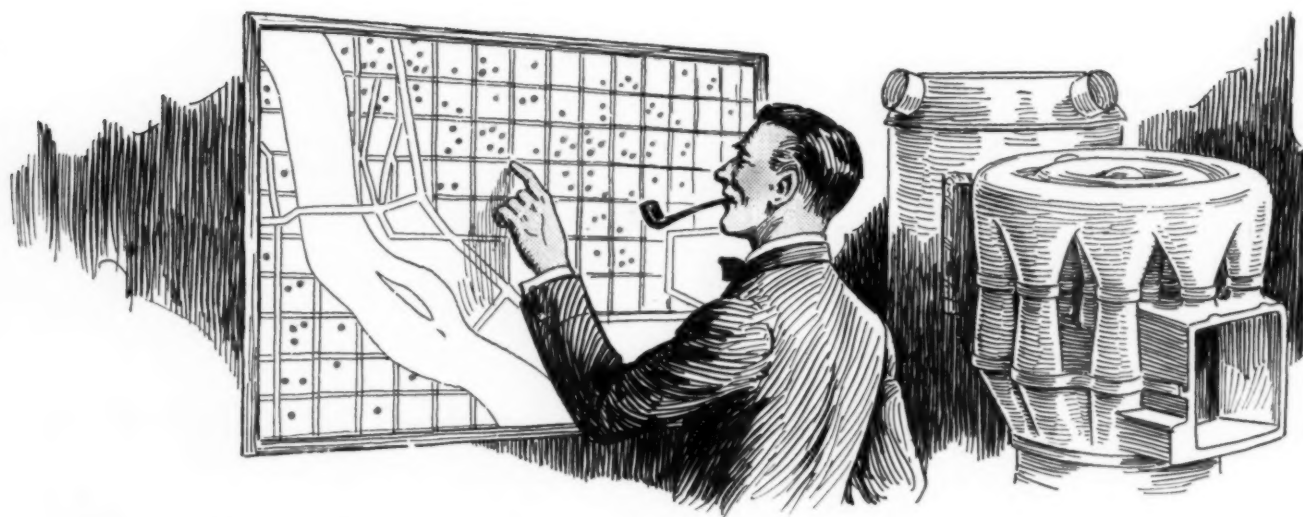
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Business is *where* you find it and Mueller does the finding—

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Mueller Double Radiator Furnace—a self-cleaning warm air furnace with more direct heating surface than any other furnace of equal grate area.

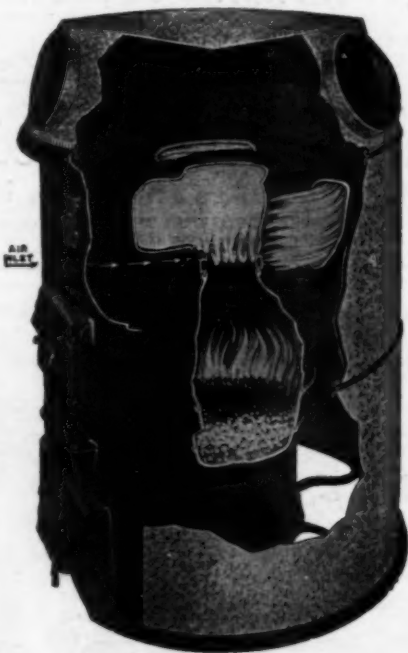
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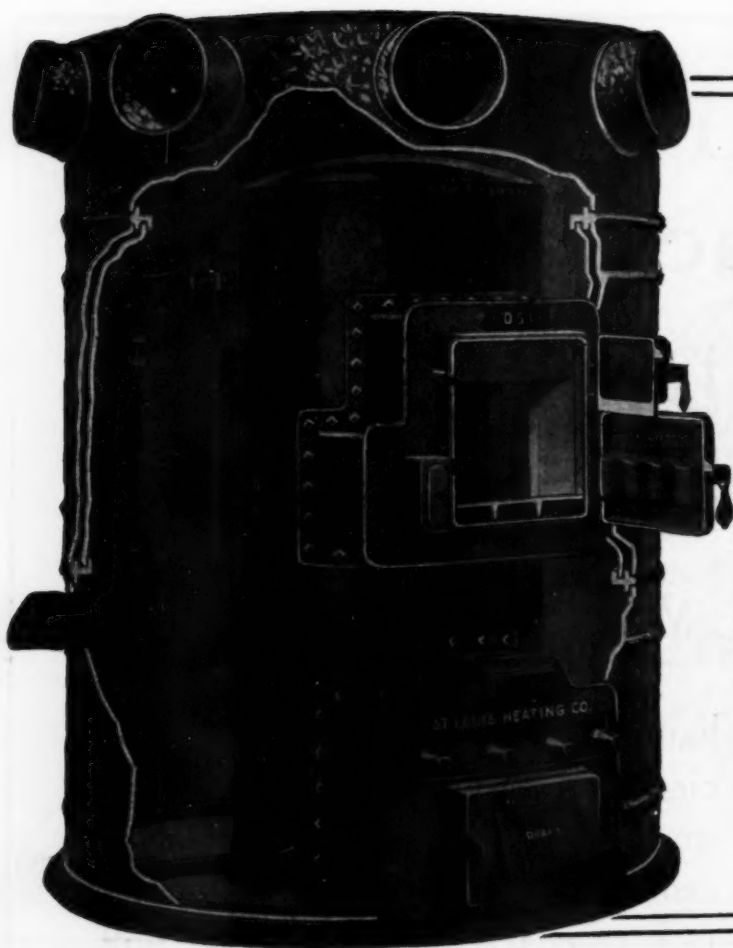
SUPER-SMOKELESS PIPE AND PIPELESS

ESSEX PIPE

ESSEX PIPELESS

NEW IDEA RECIRCULATOR

Published Weekly by American Artisan and Hardware Record, Inc., 630 South Michigan Avenue, Chicago, Illinois.
Entered as Second Class Matter June 25, 1887, at the Post Office at Chicago, Illinois, under act of March 3, 1879.



**Only real quality
can make real
profits for you—**

AND when you decide to sell steel furnaces, which you will some day, remember that the construction of the furnaces illustrated here has the features of construction that have made

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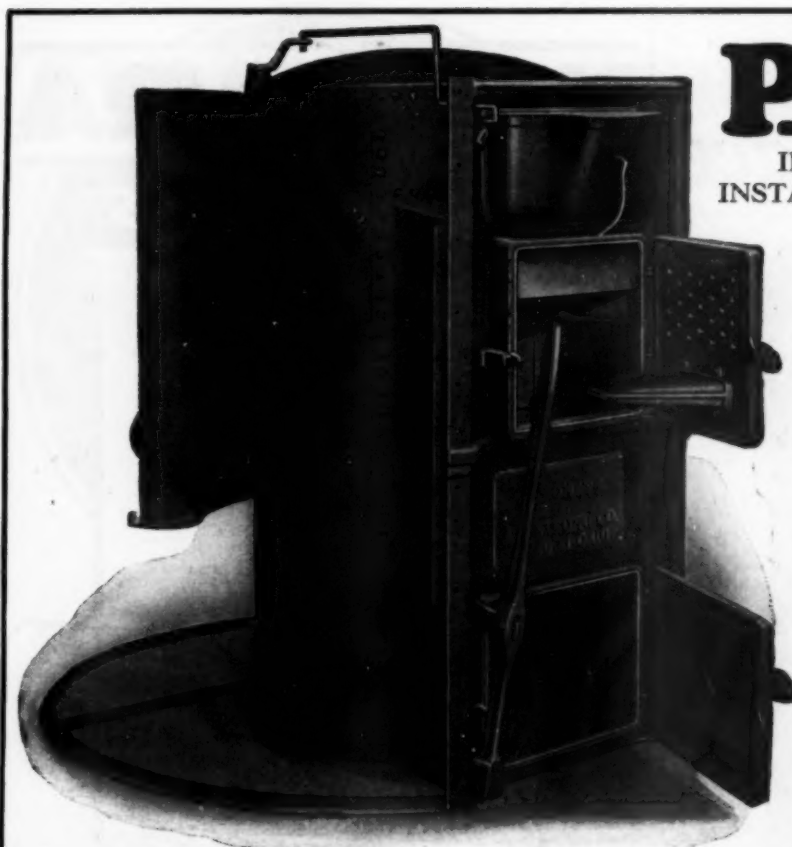


KNOWN as the Furnace that's "Just What the Public Wants" has recently been still more improved in a practical way, by eliminating the joints on front extension; by making the radiator still larger and of a one piece side wall construction, and by using heavier and smoother shaking grates, as well as heavier construction throughout. It's easier now to sell than ever.

Easy to install, too, for every furnace is completely assembled at the factory to insure perfect fit, and then taken down and packed for shipping.

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COLD RIVETED and WELDED
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TO LIVE DEALERS

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proposition.

Name

Address

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Dept. 501 — LONDON, OHIO

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POSITIVELY GAS AND SMOKE TIGHT

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for 1927. That is why we designed the new Series "C," so far
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We have been surprised at the wonderful reception given
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We supply everything used on a warm air heating job



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*-yet still in the
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increased business for you.

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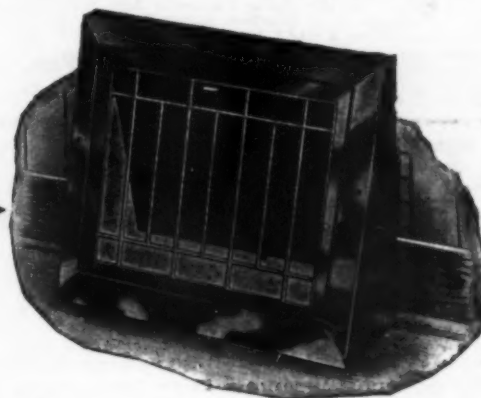


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Boston, Mass.

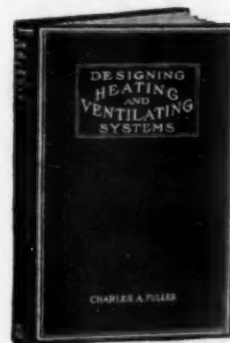
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AND HEATERS**
THE CLEVELAND CASTINGS PATTERN COMPANY
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By
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Member: American Society of Mechanical Engineers; American Society of Heating and Ventilating Engineers

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The author explains in simple English practical information on heating and ventilation of school and public buildings, churches, stores, etc. He also covers the setting up of furnaces, and describes all types of furnace fittings.

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620 S. Michigan Ave., Chicago, Ill.



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WE know that many furnace contractors find it hard to figure estimates according to the Standard Code—and most of them wish to because they are fully aware that installations **ACCORDING TO THE CODE** are the only **REAL** way to build up a business—so we make this offer.

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F. MEYER & BRO. CO.

PEORIA,

ILLINOIS

(Makers of Handy Pipe)

Published to serve
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Sheet Metal, Roofing
Stove and Hardware
Industries

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ADVERTISING AND EDITORIAL STAFF

Etta Cohn
J. F. Johnson

G. J. Duerr
Frank McElwain

Eastern Representatives: M. M. Dwinell, J. S. Lovingham, 156 5th Avenue, New York City

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AN ACHIEVEMENT

An explanatory note regarding service to readers of AMERICAN ARTISAN. This paper is now nearing the completion of a half century of service. For almost fifty years it has catered to the needs of the men in the industries which it represents. At no time during its long and successful career has AMERICAN ARTISAN been in a better position to render complete, adequate service to its readers than it is today. In addition to the matter contained in our regular weekly publication, we maintain Service Departments for the use of our readers. If you have a problem to solve, we courteously invite you to submit it to us for solution. In what better way can we learn of your problems than from you direct?

Steel Furnace Sales Increase 300% in Two Years

Q A reliable authority gives the increase of sales in Steel Warm Air Furnaces in 1926 over 1924 as more than 300%. Here is a growth of which every thinking and progressive furnace man must take heed. It is like the remarkable increase in Balloon Tires in almost the same period in the automobile industry. And what is the cause? It is two-fold. The perfecting of the machinery to manufacture the steel type of warm-air furnace on a big and practicable basis. Second, the decided merit and advantages of the steel-built furnace itself.

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Address—New Business Dept.

Marshalltown Heater Co.



Marshalltown, Iowa

Mention AMERICAN ARTISAN in your reply—Thank you!



For Every Room



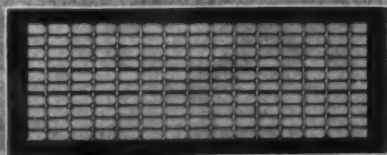
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No. 657. Cold Air Intake



No. 200. Floor Register



No. 255. Cold Air Face

In design and appearance there is an H & C register for every requirement, which harmonizes with the room in which it is to be used.

The larger air capacity of H & C registers permits the use of much smaller sizes than was customary before the introduction of these registers.

THE HOME-OWNER appreciates the improved appearance and saving in floor or wall space when these smaller registers are used.

THE INSTALLER appreciates the savings—both on the registers and fittings—to be gained by the use of a smaller register of large capacity.

The Air **H&C** *Capacity Line*

The Hart & Cooley Mfg. Co.
New Britain, Conn.



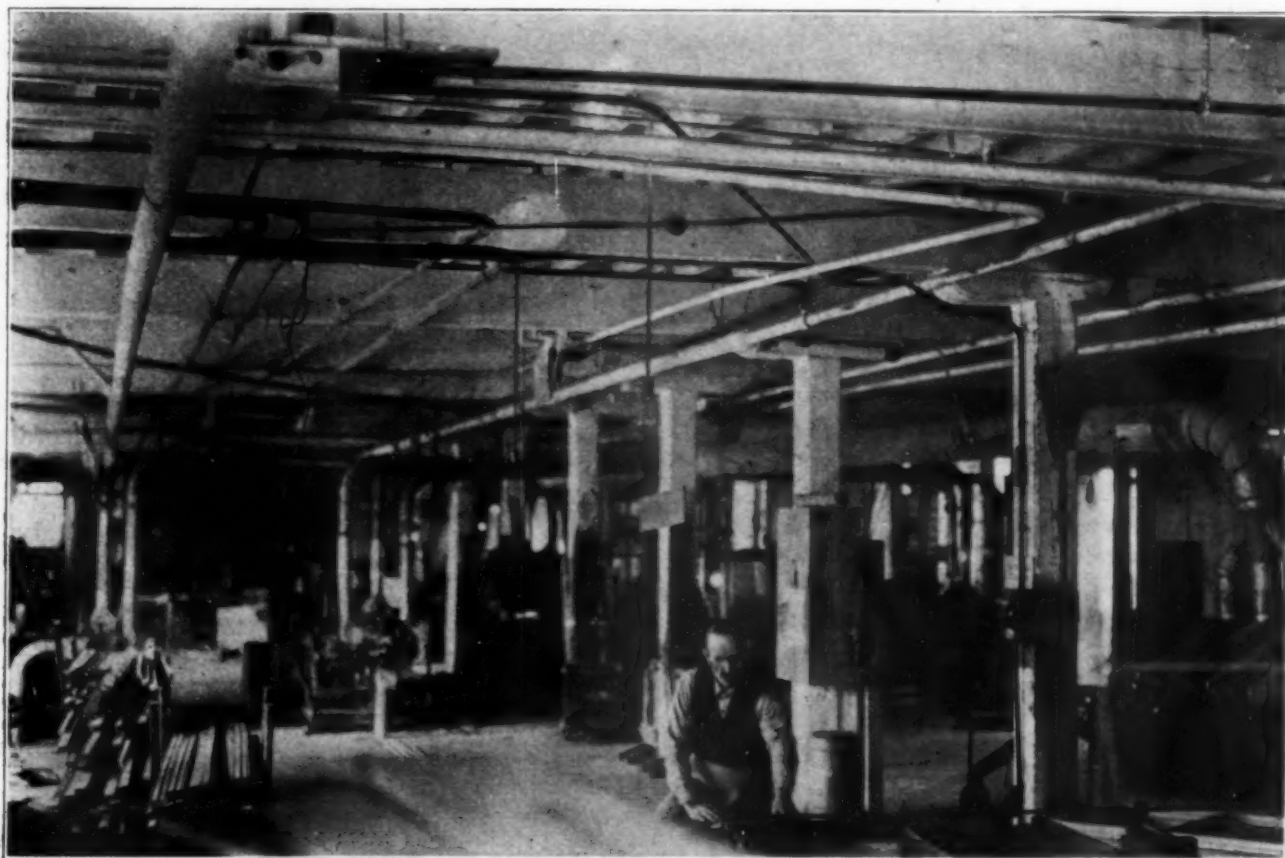
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CHICAGO, FEBRUARY 19, 1927

No. 8.



Showing Overhead Exhaust System Installed in Factory

Sheet Metal Extensively Used in Pennsylvania Factory Exhaust Systems

Shoe Factories, Saw Mills and Others Give Sheet Metal Man Excellent Opportunity

By C. H. THOMAS

ON several factories in Chester county, Pennsylvania, can be seen large sheet metal drums or waste collectors, in which the dust and other particles that accumulate in the factory are carried through sheet metal pipes to this receptacle and here collected for further distribution as waste.

Some of these systems are quite elaborate. They insure safety and cleanliness in the factory for the

workmen; some are also used to provide warm air where needed, when the ordinary heating system needs an auxiliary aid for its use.

In looking over these systems, we find that sheet metal is the only kind of material that will most satisfactorily answer the purpose for this sort of thing, because it combines several things in its construction that are necessary for long life, stability in placing and

absence from rust over a long period of time.

On a fiber plant where fumes touch it, on a large planing mill, and on a woodworking plant, these three are functioning well and using sheet metal in large quantities in the construction of their blower systems, which have found a very necessary and economical part in the scheme of modern manufacturing.

The sheet metal pipes that are used in these plants take up but little overhead room, are not unsightly. They could be used in many other plants where they are not used today if the sheet metal contractor would but suggest their possible use and give the factory

owner prices.

The modern workman demands sanitary working conditions and rightly so, and fumes of many kinds, also dust and kindred particles can be best eliminated by the use of sheet metal blower systems. This is not a treatise on any special

blower system, but simply to show that the use of sheet metal is best adapted in many ways and best fitted for the needs of the modern systems now in use, as against other methods of construction.

If you have put in similar jobs, let us have them.

How the Profit Is Being Squeezed Out of Business

A Discussion of the Cause With a Suggestion for Remedying the Situation

By CHARLES F. ABBOTT, Institute of Steel Construction

THE glove industry is still free from outside competition. There is no substitute for gloves. The competition within the glove industry, however, is pronounced. There are quite a large number of concerns in this industry. The fact that seventy per cent of them made a profit proves, however, that the average business man need not worry about his inside competition. If he can check the inroads of outside competition, inside competition is likely to prove more of a help than a hindrance.

Outside Competition Underlying Cause of Ills

I have been studying this question of outside competition for several years. It is both my observation and experience that it is the underlying cause of most of the major ills of business. I am not alone in this belief. Dozens of our greatest industries have come to the same conclusion. What is more—many of these industries have proven that it is this outside competition that was the cause of their troubles. We know this because since these industries took steps to fight back at invading competition, they have found their troubles gradually disappearing.

Now let us see what these steps were that these industries took. They got together and formed associations. The manufacturers within an industry stopped fighting one another, and banded together to

fight the industries that were cutting in on their fields.

Trade associations began to be

In this article Mr. Abbott has clearly defined the causes of failure to make profits in any industry. He has shown how this failure is not the result of competition within the industry, but rather is due to the encroachments of industries which manufacture substitutes for the articles which any given industry may be engaged in manufacturing. The one and only way that such competition can be successfully combated is by association and cooperative advertising. Mr. Abbott points out that in practically every industry where external competition has been encountered it has been overcome by association for the purpose of protection. That is exactly where the sheet steel industry is today—fighting external competition. And how is the fight being carried on? By cooperative national advertising. This is the second of the series which began in the February 12th issue.

—The Editor.

organized on a fairly extensive scale in this country in the period following the Civil War. For forty or fifty years, however, the business

men who entered these associations did not recognize their competition as coming from outside their industries. In fact, at first this outside competition did not exist to any great extent. Competition among industries did not become noticeable until about 1900. Since then, competition of this character has been increasing each year.

So, perhaps it was natural for the earlier associations to feel that by reason of the organization they had succeeded in killing inside competition, and were, therefore, free to manipulate conditions for the benefit of the members of the group.

In some instances they began to fix prices, to raise prices and in other ways to bring about conditions that virtually eliminated competition within the industry. It was to meet situations such as this that the Sherman Law, the Clayton Act, and the Federal Trade Commission Act was passed. By virtue of these statutes, it is illegal for business men to engage in any practice that directly or indirectly restrains or limits competition.

As the Government began to take action against various associations for violating these anti-monopoly acts, and the courts began to hand down decisions upholding these statutes, it looked bad for the trade association movement. Several associations jumped to the conclusion that if the whole question of price was prohibited, the trade asso-

ciation had no other excuse for existence.

Combinations to Uphold Prices Worse Than Useless

But this was a short-sighted view of the matter. Dealing with questions of price and engaging in practices to restrain competition are two of the least important things that an association can do. There are actually hundreds of other activities in which it can engage, of vastly more value to the members. In fact, we now know that combinations to uphold prices and to establish monopolies are worse than useless. They do not come within a thousand miles of striking at the cause of the real trouble, which is outside competition.

These combinations wouldn't do any good even though they were legal. If an industry upheld its prices monopolistically, it would only be making it easier for its outside competition to make headway. We shall see later that there is only one way which is justified legally and from the standpoint of good merchandising, for an industry to get fair prices.

When business men realized that there were many constructive activities in which their associations could engage that were approved by the Government, the association movement took a jump forward that has placed it in a position where it has become the means by which most of the ills of business can be overcome. As a result, trade association has become one of the greatest constructive instrumentalities for business betterment that there is.

No Deterrent to Association for Mutual Betterment

Be assured that there is nothing in the Statutes of the United States, or in the decisions of its courts, that prohibits business men from getting together for mutual betterment. That people have the right to combine for mutual aid has been recognized throughout the centuries. In fact, it may be said that practically every step that the human race has taken forward, has been the result of cooperation of one

form or another. The individual is weak. He attains strength when he unites with his fellows.

What are some of these legitimate activities in which an association may engage? Perhaps this question can best be answered by a statement which a great citizen of your State, Secretary of Commerce, Herbert Hoover, once made:

"Where the objectives of co-operation are to eliminate waste in production and distribution, to increase education as to better methods of business, to expand research in processes of action in policing business ethics, to maintain standards of quality, to secure adequate representa-

We wish to call the attention of readers of AMERICAN ARTISAN to the March 5th issue of AMERICAN ARTISAN. This issue will not only contain a complete story of the Michigan Sheet Metal Contractors' convention, but will also contain a story of a warm air furnace installation using the overhead register for the delivery of warm air and installed in the home of Charles E. Tharp, a warm air furnace installer of Fort Wayne, Indiana. Don't forget to read these two stories.

tion of problems before the Government and other economic groups and to improve conditions of labor, to negotiate collectively with highly organized groups of labor, to prevent unemployment, to supply information equally to members and to the public, upon which better judgment may be formulated in the conduct of business; then these activities are working in public interest."

On another occasion, Secretary Hoover's Department made this statement:

"The trade association as a facility for the promotion and self-regulation of industry and commerce has become by reason of its scope and activity, an important business institution."

Better even than Mr. Hoover's words, however, is the encouragement and the active assistance which he has given trade associations ever since he entered the President's cabinet. He has done more by far, than any one man, to

make the trade association movement the force for good that it is today.

And, speaking of the California Fruit Growers' Exchange, we have a fine example of what a body of this kind can do to accomplish the things that I have been discussing. Not only did the Exchange by its energy, find a market for the ever-increasing citrus crop, but it found it at a selling expense which is greatly lower than the cost of selling oranges that used to exist before the days of the Exchange. In the Exchange, we have an illustration of how much more effective are the methods of the modern association over the price-fixing tactics that the associations of another day used to attempt. A price-fixing body would not have accomplished anything for the citrus growers of California. What they needed was some means of giving them a market sufficiently large to absorb their ever-increasing crops.

They found this market through advertising and the various sales activities which have accompanied their advertising. With a strong demand for their fruit, prices have been maintained on a basis that assures a fair profit to the grower. Were it not for the advertising and market exploration methods of the Exchange, it would have been impossible to market that state's enormous citrus crop. Gluts would have resulted, prices would have been demoralized.

And would the consumer have benefited from this situation? Not at all. Temporarily in those places where there were gluts, people would have been able to buy citrus fruits for a song. But eventually the demoralized condition of the industry would have resulted in scarcity and high prices. Today, people can get oranges at fair prices throughout the year. If the industry had remained unorganized, oranges would not be an all-the-year crop, the supply would be uncertain, the distribution intermittent, and a topsy-turvy merchandising condition in general would exist.

(To be continued)

Fan Connections Require Greater Consideration as Ventilation Increases

Proper Development Needs Some Detailed Study and Thought

By O. W. KOTHE, Principal St. Louis Technical Institute

IN sheet metal duct work we meet with many different kinds of connections, which are usually gotten out by one man in one way or another. The rest of the men on the job do the manufacturing of the pipes and the erection of it. This is more or less a mechanical job and that is all it ever amounts to. Men who can lay out all kinds of fittings as well as know how to design such fittings and to figure the flow of air and to regulate its velocity are decidedly more valuable to any firm than men who only know how to connect up cap strips. There is nothing particularly skillful in the latter.

In our side elevation we show a fan that has two pipes leading in different directions. At the fan discharge opening the velocity is always greatest, and is often so great that it is impractical to continue it through the duct system; therefore, the ducts are enlarged as soon as possible after leaving the fan. Hence the left hand elbow is 48 by 60 inches in size at the fan and it is transformed to 60 by 96 inches, which is a rather large connection to make. Work of this large nature can be conveniently developed to a scale of say $1\frac{1}{2}$ to 3 inches to the foot, and patterns developed for it. After this the pattern can be measured off to the sheets required and full-sized measurements filled in. This makes it rapid reproducing on the metal.

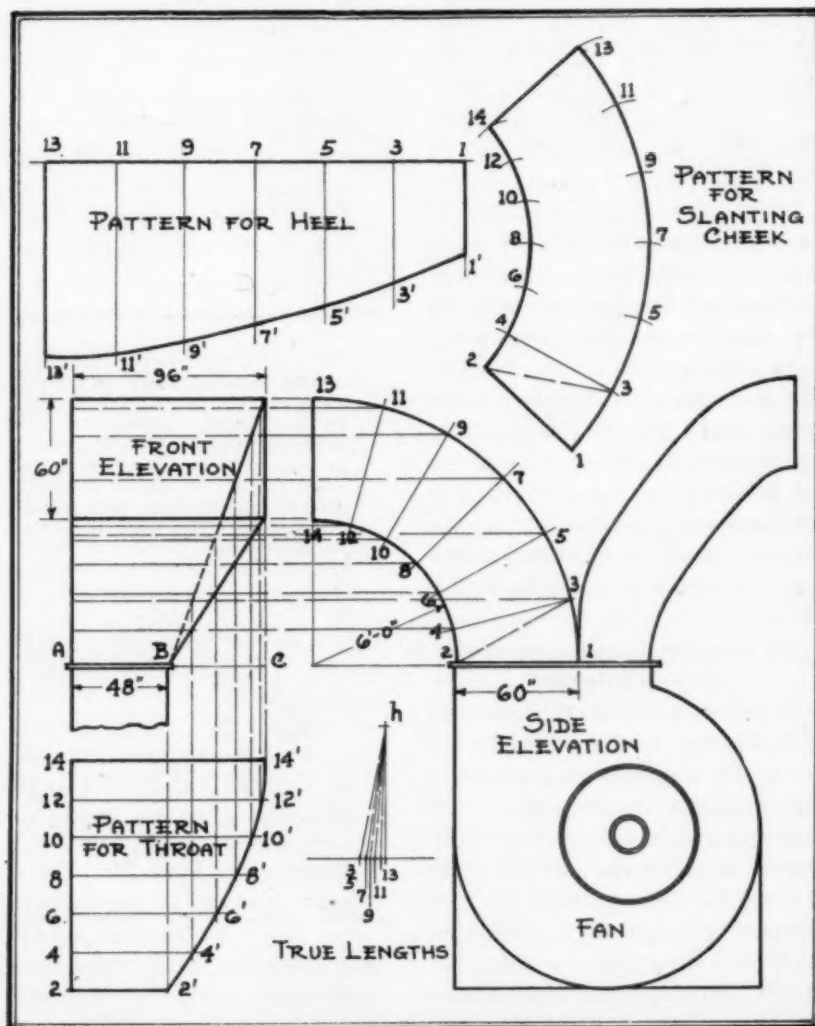
The first step is to draw the side elevation and divide the heel in any number of equal parts as drawing to the center. Next draw the front elevation to conform with measurements given and pass the lines from the side elevation over into the front. The throat and the heel can easily be developed by the projection method much the same as any

elbow pattern which must be cut to a straight line. But the cheek for the slant side must be developed by triangulation since this has an enlargement in it. Some men build up elbows of this kind for the three pieces and then just simply lift the fourth side. But it can be developed by triangulation very easily when the diagram of true lengths is developed by picking the differences between the throat and heel and use that as off-set.

Observe only the dotted lines as 2-3 and 4-5 need to be determined,

while the solid lines are true lengths since they hold the elbow to this width and it is only the dotted lines that travel from one rise to another. These are, therefore, set on the vertical line which establishes point H in this case, and when the differences are picked from the throat and heel lines of front elevation they are set on the base from a vertical line, which gives points 3-5-7, etc., to 13.

Then, in setting out the pattern, we use the girth spaces 2'-4'-6', etc., to 14' from pattern for throat



Patterns for Fan Connections

of cheek. For the heel in the cheek we use girth spaces from 1' to 13' in the pattern for heel. After this the process is merely one of triangulation, picking the true lengths for the dotted lines and using solid lines direct from side elevation. In this way the pattern for the cheek is laid out to fit the throat and the heel and should have the proper

length, so cap strip edges can be bent without any difficulty.

Such elbows being right on the fan have to do with some vibration and, therefore, the corners should be either double seamed or riveted as soldered or hammered lock is hardly substantial enough, although many folks use hammered lock wherever possible.

What Is "Normal" Business?

By WALTER C. CARROLL, Vice-President Inland Steel Co.

IF we have a clean-cut idea of what normal business is, then, have we had normal business during the past year, and may we expect abnormal business during 1927?

From the standpoint of the steel industry, we have enjoyed, during the year 1926, a volume of business which must be considered far above normal. There have, of course, been several short periods where demand was not sustained at the expected high rate, but these were of comparatively short duration.

Production figures, which will be available in the near future, will reveal the fact that many all-time records have been broken. It will be found that consumption as well as production has proceeded at a record-breaking pace, and a careful analysis will show that steel in many of its forms is not only replacing other materials, but is rapidly entering entirely new fields.

Simplification Important

At the beginning of the year 1927 we find inventories at the lowest point in history, when the volume of business is taken into consideration. This is largely due to the excellent performance of the railroads. Freight cars, to a considerable extent, are taking the place of the consumers' warehouses as they travel between the steel works and points of consumption. Stocks of from sixty to ninety days' supply seem to be no longer necessary. Much working capital has, therefore, been released. The work

of Mr. Herbert Hoover's department, to bring about simplification of sizes and styles, and the consequent elimination of waste, deserves prominent mention.

It is generally in order, when attempting to look into the future, to mention certain important factors which have a direct bearing on sound business. Perhaps we have taken for granted the steadying influence, which is a direct result of the Federal Banking System. We would consider him a false prophet who now predicts a panic or even fears unreasonable inflation. There is nothing in the immediate future to indicate other than easy money. Railroad equipment has been steadily used during the past two or three years. Earnings have gradually increased, but replacements have not kept pace with wear and tear. The new year, therefore, promises to be a most favorable one from the standpoint of purchases by railroad companies. The increasing use of automobile trucks and the continuation of the road building program are closely linked with the railroads and are a direct result of a sustained demand. The automotive industry has given evidence of unusual sanity; installment buying of cars has been restricted to a more healthful basis; our enormous building program is to be continued, and, while we may find a falling off in the number of smaller buildings, it is possible that the heavier types of construction will fully compensate.

Business Steadier

During the early years of big

business in this country, our periods of both depression and prosperity were disastrous because of the extremes to which business was carried in both directions and the duration of these two unhealthy conditions. In the steel business, the peaks and valleys of recent years do not show such great extremes. The periods of recession are shorter, demand and production are on a gradually rising plane, and the industry is, therefore, proceeding on a more even keel. The sustained buying power of the wage earner has, of course, been due to great volume and steady employment. The conservative selling prices for steel products have enabled many projects to be carried forward. The much-dreaded vicious cycle of past years has assumed a much happier aspect.

But what is normal business? Is it not a satisfied state of mind due to those factors which make for good business, such as a substantial order book, fair selling prices and good prospects for the future? In other words, a state of business which is just a little better than had been anticipated? If this definition has been correctly framed, then our state of mind must be adjusted as a result of the gradually but steadily increasing demands of our great country.

General Sheet Metal Works Enters Business at Rockford—Send Catalogs

A new company which has recently been organized in Rockford, Illinois, is the General Sheet Metal Works, 1526 Seventh Street, and doing heating, ventilating, cornice, blow pipe and skylight work.

The officers of the new company are, President, Kenneth E. Anderson; Vice-President and Shop Manager, Thomas L. Dennick; Secretary and Treasurer, Oscar C. Hultberg.

Mr. Hultberg, in making the announcement, says that he will be glad to receive catalogs and prices on furnaces, pipe and fittings, tools such as those required in a sheet metal shop.

*Reprinted from February issue of "Making Markets."

Sheet Metal Dan Inspects All Factors of a Job Before Bidding

He Wants to Know How Good His Chances Are of Getting His Money

IN THIS, the fifth of a series of articles on things the sheet metal contractor ought to know, Sheet Metal Dan, of the Distributors' and Salesmen's Auxiliary, to the Sheet Metal Contractors' Association of Pennsylvania, tells the members of that organization and the readers of *AMERICAN ARTISAN* why he laid off a big job.

"Are you going after that roofing contract for the new Smith's Hotel, Dan?" It was my old friend Jim tackling me the other day on Main Street. "They're all talking about it," he went on.

"Are they?" I asks, not particularly interested.

"What's the matter?" he comes back at me surprised. "I thought you were a live-wire contractor. You never used to pass up any likely jobs before. What's wrong anyhow—getting old?"

"Maybe I'm getting old and maybe I'm getting sense. I've been there before, you know," I growls.

"You're a funny duck," puts in Jim. "Talking in riddles again."

"What's on your mind, anyhow? Explain yourself."

"Riddles nothing," I retorts. "It's plain as the nose on your face. The contractors are falling all over themselves trying to get the job. The bidding's too close, I tell you. My time's too valuable."

"The devil you say," returns Jim, sort of taken aback.

"Those cusses have got their minds all made up who they're going to give the contract to, and I know it isn't me. Why should I spend my good time figuring out a bid just so they can check up the other fellow's figures?"

"Anything else on your mind, Dan?" asks Jim, grinning.

"Yes, there is," says I, warming up. "I don't like their financing scheme, either. The hotel looks like

a speculation to me—trying to swing it on too little capital."

"What's that got to do with you? That's their affair, isn't it?"

"It is and it isn't. For one thing, they won't want a quality job, but a price job. That lets me out right away. I want my jobs to advertise me."

"I see," says Jim. "Anything else, Dan?"

"Only this. Supposing they run



Sheet Metal Dan Tells Why He Laid Off a Big Job

short of funds during construction. How am I going to get my money?"

"Guess you're right, Dan. But what puzzles me is where you got your dope."

"Oh, I belong to the Sheet Metal Contractors Association of Pennsylvania. If you belonged they'd put you wise too."

You will get a lot of help out of Sheet Metal Dan's next story. He's going to talk about "Choosing the Right Jobs." These stories are issued to members of the Sheet Metal Contractors' Association of Pennsylvania by the Distributors' and Salesmen's Auxiliary of that association from the office of Secretary

W. F. Angermyer, 7253 Frankstown Avenue, Pittsburgh.

The Value of Attractive Window Displays

Progressive merchants realize the great influence that window displays have upon sales. The show window of the average merchant is the most valuable space in his store. It is his most direct form of publicity.

Successful stores in large cities are willing to pay high rent for certain locations, because they offer particularly good window space. In computing the proportionate value of the space of a store one hundred feet deep, 13 per cent of the entire value is usually allotted to the window. In every shopping district there are numerous stores competing for the business of the shopper. To get his share of this business, the retailer must display his merchandise effectively.

Suggestions on Window Displays

1. Window glass, woodwork, floor covering, and fixtures should have a clean and polished appearance. A display that is allowed to become dusty and faded is worse than none at all.

2. A display should be made with one, two or more related objects, rather than with a miscellaneous assortment. It should have unity. Do not crowd merchandise into the window.

3. Windows should be well lighted with adequate lamps and reflectors. They should be illuminated at night, as many people who would not see them during the day have time in the evening to view displays.

4. The background of the window is mainly for the purpose of limiting the view and making the

proper setting for the merchandise. The center panel of the background should be planned first, as the display is usually built around it.

5. The size of the window is a secondary consideration from a standpoint of attractive display. A small window can produce as good results as a large one. Do not fill a large window with small objects, unless they are grouped.

6. It is advisable to have at least one descriptive card or poster to convey the message to the less discerning.

7. The display should be timely—up to the minute with color or

designs of popular interest. Create a holiday atmosphere with shields or flags for patriotic days, holly or Santa Claus for Christmas, combined with appropriate merchandise.

8. Next to life, color is the best medium for attracting attention. Dashes of color in a display enhance the attention-creating value of the display.

Don't forget the window display competition of the Travelers Auxiliary to the Illinois Sheet Metal Contractors' Association. See the details about it in *AMERICAN ARTISAN* for February 5, 1927, page 37.

Master Sheet Metal Men of Milwaukee Discuss Code of Fair Practice

**Paul L. Biersach Wins Attendance Prize
—State President Elect Visits Meeting**

THE Code of Fair Practice of the Milwaukee, Wisconsin, Construction Industry had its inning at the monthly meeting of the Master Sheet Metal Contractors' Association of Milwaukee, February 9, when it came up for discussion. But as all members were not conversant with it, the secretary was instructed to have copies of it sent to the members so that definite action could be taken at the March meeting.

The meeting was called at the office of the Alfred C. Goethel Company, 829 Thirty-first street, and A. Schumann, newly elected president, occupied the chair.

The offer of the American Rolling Mill to show a film on the manufacture of iron and steel sheets was read. On motion by Mr. Jeske, seconded by Mr. Hammann, a unanimous vote was cast to arrange for this added feature at the regular meeting in May.

Letters from the Thatcher Company, Thomas A. Manning, the Sheet Metal Contractors' Association of Mississippi, and Nicholas F. Rott were read, and the secretary instructed to answer each.

The meeting was also attended by two state members, the state

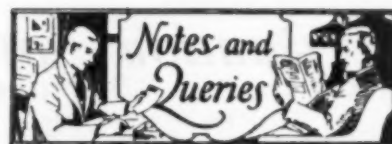
president-elect, Mr. Cecil C. Tolg, of Waukesha, who gave a short interesting talk, and Aug. Zanders, of Oconomowoc.

The attendance prize was won by Mr. Paul L. Biersach. For next meeting this prize will amount to \$6.25. Motion made and carried to have all association members name put in for the attendance prize, and if winner not present, same to be added to amount for the next meeting.

Refreshments served by Mr. Alfred Goethel.

C. R. Keeler Leaves Chicago Office of Hart & Crouse Company

C. R. Keeler, who for a number of years has represented the Hart & Crouse Company in Chicago, has severed his connection with that firm and is now with the Chicago sales division of the Standard Oil Company of Indiana. It will be remembered that Mr. Keeler played a mean game of ball for the salesmen at the picnic of the Cook County Sheet Metal Club last summer. He is well known to sheet metal contractors and furnace installers throughout the Chicago territory.



Address of Miller Rubber Company
From Rock Island Register Company,
Rock Island, Illinois.

Kindly advise address of Miller Rubber Company who make the Miller Mallets for sheet metal work.

Ans.—Akron, Ohio.

Ozonators

From O. W. Wade, Wade Furnace Company, 2 Court Arcade, Cincinnati, Ohio.

Please advise address of a company that makes a machine to go on a hot air furnace for making ozone.

Ans.—Air Conditioning and Engineering Company, 2914 South Jefferson Avenue, St. Louis, Missouri, and Ozone Pure Airifier Company, 1455 West Congress Street, Chicago, Illinois.

Cast Iron Smoke Pipe

From Theodore A. Kouf, Whitehall, Wisconsin.

Please advise who manufactures cast iron smoke pipe.

Ans.—Waterloo Register Company, Waterloo, Iowa. It is carried in stock by the Robinson Furnace Company, 205 West Lake Street, Chicago, Illinois. It is also made by the Faultless Castings Company, Brazil, Indiana.

"Clark" Automobile Foot Warmer

From P. D. Burrell, Outdoor America, 536 Lake Shore Drive, Chicago, Illinois.

Who makes "Clark" automobile foot warmer?

Ans.—Chicago Flexible Shaft Company, 5600 West Roosevelt Road, Chicago, Illinois.

Sprinkler Can Roses

From Ed. F. O'Toole, 7935 North Broadway, St. Louis, Missouri.

Please advise who makes sprinkler roses for watering cans.

Ans.—Berger Brothers Company, 237 Arch Street, Philadelphia, Pennsylvania; Consolidated Fruit Jar Company, New Brunswick, New Jersey, and William Vogel and Brothers, 47 West 9th Street, Brooklyn, New York.

Random Notes and Sketches

By Sidney Arnold

"The essence of humor is sensibility; warm, tender fellow-feeling with all forms of existence."—Carlyle.

Frank Ederle, secretary of the Michigan Sheet Metal Contractors' Association, does a great deal of traveling.

One day, while on a train going to Detroit from Grand Rapids, Frank became very impatient at the progress the train was making, hailed the conductor and made his complaint.

"Well," said the conductor, "if this train isn't going fast enough to suit you, you had better get out and walk."

"I certainly would," replied Frank, "but the folks won't expect me until the train gets there."

* * *

A short time ago in Fort Wayne, Indiana, a large burly man called at the residence of H. O. McElwain, who sells furnaces for the Lennox Furnace Company, in Indiana and Michigan.

When the door was opened, the man asked to see Mrs. McElwain, who is well known for her charity impulses. "Madame," he addressed her in a broken voice, "I wish to draw your attention to the terrible plight of a poor family in this district. The father is dead, the mother is too ill to work, and the nine children are starving. They are about to be turned into the cold, cold streets unless some one pays their arrears in rent, which amounts to fifty dollars."

"How terrible," said Mrs. McElwain sympathetically, "may I ask you who you are?"

The weeping visitor applied his handkerchief to his eyes and said, "I'm the landlord."

* * *

Crippled Industry

Harry Rhodes, one of the directors of the Michigan Sheet Metal and Roofing Contractors' Association, was traveling through the South not so long ago. Harry was looking for diversion, so he stepped into a municipal court of

domestic relations in order to absorb some funny conversations to spring at the coming Michigan convention. Harry hadn't been there very long when a tall heavy set colored mammy came in. "Jedge," said this mammy, "dat. der nigger settin' over thar (indicating her divorced husband) ain't paid me any alimony for seben months."

The judge, looking over at the rather disconsolate ex-husband, said: "Well, Mose, how about it; is it true that you haven't paid this woman her alimony for seven months? Haven't you been working lately?"

Mose perked up for a moment and said: "Well, Jedge, you see it's like dis, I haven't been able to find my dice."

* * *

True Hospitality

Isaac Lammers, secretary of the Grand Rapids, Michigan, Sheet Metal and Heating Engineers' Association, has the reputation for extreme hospitality, some of which he is going to inject into the greeting he gives the Michigan Sheet Metal men when they come to Grand Rapids next week. You know when Ike was a young kid he used to find the old swimming hole, the same as all the rest of us have. One day Ike and a few other boys were in the hole in the garb of nature. Suddenly an old spinster lady hove into view. "Isn't it against the law to swim without a bathing suit?" said she to the boys. "Yes," piped up Ike, "but Freckles' father here is a policeman, so you can come in."

* * *

Mr. H. A. Ackerman, sheet metal contractor and warm air furnace installer at 4011 West Harrison Street, Chicago, also paid me a visit on Thursday of this week. I certainly appreciate having these men drop in this way, because it gives us a chance to meet our read-

ers personally and I hope whenever any of those from distant cities are in Chicago, they will not fail to stop in for a few moments.

* * *

I had the pleasure of a visit from Mr. Charles E. Hedblom, 214 Van Buren Avenue, Naperville, Illinois, on Thursday afternoon of this week. Mr. Hedblom, I am sorry to say, has been laid up in the hospital for some considerable time as the result of an accident, but he is well on the road to recovery again now. He has been a constant subscriber to AMERICAN ARTISAN since 1893. It certainly gives me a great deal of pleasure to have these men come into our office and I hope to have the pleasure of seeing all of you here whenever you are in the city.

* * *

A Scotchman and his wife were looking around the flying field and decided they would like to try a flight. The Scotchman walked up to an aviator who was sitting in a plane and said, "How much does it cost to go up in one of them things?"

"Fifteen Dollars," the aviator replied.

"Too much," said the Scotchman. "I'll give you five dollars."

The aviator had sporting blood in him, so he proposed, "I'll tell you what I will do. I'll take you and your wife up, and if you don't yell before we come down, it will cost you nothing."

"All right," agreed the Scot.

So up they went. They turned the loop the loop, the hand spring, and every other fancy turn in the aviator's repertoire. Finally they descended.

"Well, I guess you win," said the aviator. "You didn't yell once."

"No," said the Scotchman, "but I almost did, when my wife fell out."—*Fitting Remarks.*

* * *

I had the pleasure of a visit from Mr. Subert, Jr., of Joseph Subert and Son, who operate the Practical Furnace Pipe Company, 1516 Euclid Avenue, Oak Park, Illinois, one day this week.

The Editor's Page

Shop-Keeper or Business Man?

BETWEEN the man who merely keeps shop and the true business man there is a vast difference. The shop-keeper sits in his store and waits for the trade to come in. His interest is in making a living sufficient to warrant his existence. As the old saying was, he keeps a shop and the shop keeps him. No complications about that; a simple, easy life of self-satisfaction for the most part.

Each year, however, the number of store-keepers grows less and the number of business men with a professional interest in their work increases. Doctor, minister, lawyer and teacher have constituted the four great professions, but today, the American business man, serving his fellow-man and helping to raise the standard of living, is supplementing the work of the so-called professional classes. While the spiritual and mental growth of humanity rests primarily in the hands of the doctor, minister, lawyer and teacher, the material comforts are being furnished by the business man in ever-increasing numbers. Moreover, he is making yesterday's luxury today's necessity.

The shop-keeper has come out of his little shop into a world full of problems to be solved. He is interesting himself in the development of his business not only locally, but nationally and internationally. He is becoming a student in all fields—production, transportation and consumption. He is ready to learn all he can about his industry and the extension of it. Furthermore, he is prepared through his trade association to not only foster that industry, but to protect it as well.

Ask yourself to which class do you belong? Are you the sheet metal man who is still content to sit in his little shop and who will not feel the need of attending his state convention? Or are you the man who is lined up with the majority of live sheet metal men in your state—yes, of the country as a whole—ready for action, ready to study better methods and the new trends in business?

Competitive Advertising Taking Away Business

ADVERTISING is a business builder. This idea is pretty generally accepted without much qualification by the active, successful well rated business man. He reasons that no matter how good a product or service he may have to offer, unless the public is made acquainted with that product or service, he will reap little benefit from it.

The sheet metal industry for a long time refused to believe in the power of advertising. They did none or at the most very little. The result was that the business

dropped off. Then they started to advertise; to tell people about the superior merits of sheet metal. With the result that the tide of public sentiment is again toward sheet metal.

But now what do we find? Other competitive industries have seen the benefits which the sheet metal industry has derived from its large scale advertising. They have also realized that what is gain to the sheet metal industry is loss to their own industry. Are they going to sit quietly by and let the business go without a fight? They are not.

Already the lumber industry has started a large scale billboard advertising campaign in and around the city of Chicago. Along the drives most frequented by our traffic great billboard signs are telling the people to re-roof with lumber. The boards show an attractive dwelling newly re-roofed with wooden shingles.

This is the type of competition which the sheet metal industry must meet. We in the industry know that the sheet metal shingle can be had in every color, shape and style that the wood shingles come in and a lot more. But that knowledge does the industry very little good unless it is passed on to the public. The industry is going to get very little good out of knowing that sheet metal roofing is fireproof, weatherproof as well as decorative unless these facts are impressed upon the public conscience so thoroughly that that public becomes convinced that they are true and begins to use sheet metal.

Unless the sheet metal industry as a whole gets busy and begins the process of impressing the public with the superior merits of sheet metal over wood for roofing purposes, that public is going to spend another tremendous sum of money on something that will not and cannot give the service and satisfaction that sheet metal can give.

How Real Salesmen Can Help You

SALESMEN may be a nuisance, in the eyes of the man who thinks their only good is to supply him with materials when he needs them.

But that isn't the half of it.

Your distributor's salesman gets around to a great many shops—and he picks up a lot of good ideas. He realizes that only as your business increases, can he hope to sell more, himself. And if you will give him the chance, he will gladly tell you all the good ideas he knows.

So, when a salesman calls on you, don't give him the cold shoulder unless your experience has taught you that he has nothing to offer. Give him a chance. He wants to help you. He has to help in order to help himself.

Two-Flat Building Refuses to Heat Above 60 Degrees

**Basement Is 90 Degrees—Furnace 900-Inch Capacity—
Takes Off 756 Inches, Brings Back 902 Inches**

HERE'S a problem of a 2-flat building that fails to heat that has been referred by Klentzer & Klentzer, Fowler, Indiana, to AMERICAN ARTISAN for solution.

The warm air furnace installer says: "We are forwarding to you a rough sketch of a double flat building with which we are having considerable difficulty in heating.

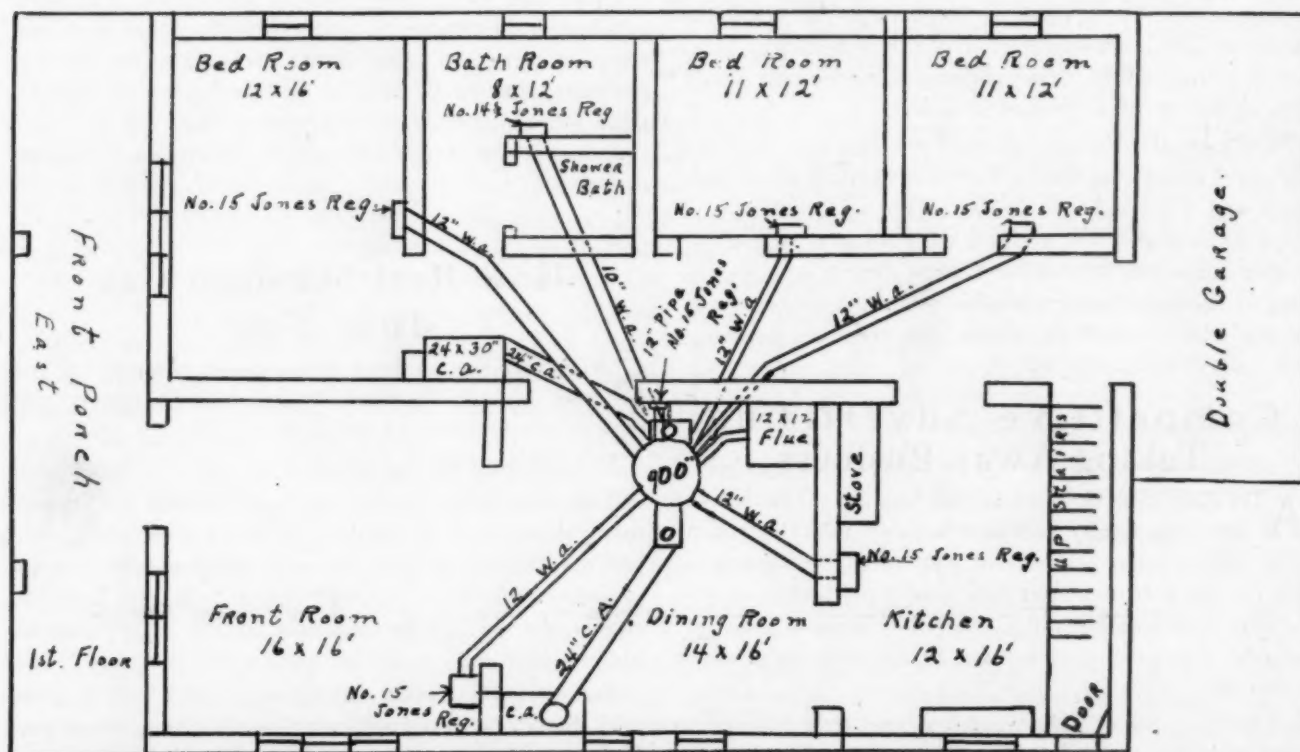
"The owner of this flat building lives on the first floor, while the second floor is occupied by a tenant. It is impossible to get the first or second floors heated above 60 degrees, although the basement is at 90 degrees most of the time. The furnace is red hot from top to bottom.

"In putting this job in, we used what is known as the Jones system of installation; that is, one pipe to two rooms. We have worked on this job off and on for thirty days and have come to the conclusion

Synopsis of heating problem of Klentzer & Klentzer, Fowler, Indiana. Impossible to get first and second floors heated above 60 degrees. Basement always at 90 degrees, while the furnace is red hot from top to bottom. The lower casing removed from furnace entirely. There are two 24-inch cold air returns to the furnace. Six 12-inch and one 10-inch warm air ducts have been installed, making a total taken off the furnace of 756 inches and returning 902 inches. The furnace capacity is 900 inches. Cold air is run to the attic on the second floor. The furnace has a 26-inch fire pot, which is 26 inches deep. The grate area is 3.96 square feet.—The Editor.

that the air in the building is dead; that is, it is immovable. We do not know what other furnace men call this condition, but we do know that the air does not move, in spite of the fact that we have tried every way that we could think of to make it. We even took the lower casing from the furnace and left that portion entirely open, but this did not help. With it all the furnace remained red hot, but none of this heat could be gotten to the rooms above.

"We have placed a furnace in this building having a 900-inch capacity, using two 24-inch cold air pipes running back to the furnace, totaling 902 inches. We are taking 756 inches of warm air from the furnace. We have taken the cold air into the attic from the second floor by placing 4x15-inch face plates in the base board of each room in the second floor, using the



Layout on 2-Flat Building that Will Not Heat

studding for stacks, with an opening cut in the partition in the attic.

"The basement is 8 feet high in the clear, with nothing to obstruct the running of pipes and cold air boots to the furnace. The cold air boots are 14x33 inches, with a 24-inch collar. The diameter of the furnace casing is 55 inches. The furnace is of the down-draft type

and is 72 inches high, having a 12x12-inch smoke flue.

"We should like to have you publish this plan, as we want to get it before the trade so that we can find out where we have gone wrong on it. It is our first experience with a job where the air has refused to move, although we have done everything we can think of to in-

duce it to do so.

"You will note that there is a 12-inch pipe close to furnace in the dining room. We also wish to say that there is not a bit of air drawing through the cold air register on the first floor. The air seems to be absolutely dead in the house. What can we do to make this air move and make the job work?"

New Book on Furnace Heating by Daniels Now Out

*Embodies Modern Practice of Warm Air
Furnace Installation Based on Research Work*

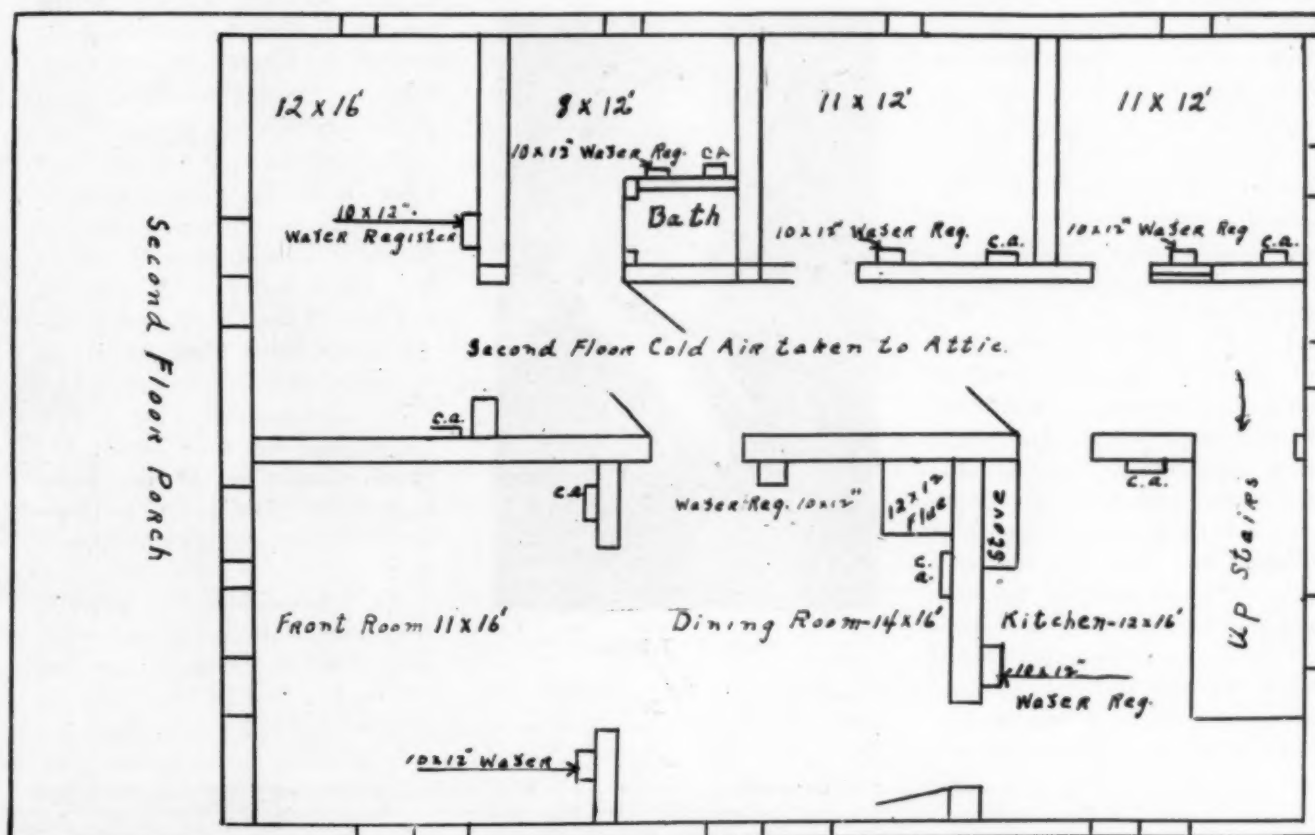
WITHIN the past week there has been published a book on warm air furnace heating which comprises a handbook on this subject. The page of acknowledgments is evidence that the author has made a thorough study of the reports issued by the University of Illinois on the research work which it has been carrying on for some eight or nine years on this subject,

under its co-operative agreement with the National Warm Air Heating and Ventilating Association, as well as with government publications and organizations interested in chimney and flue construction.

In this book the author has gone much further than treatment of the subject as related to the gravity warm air heating system. Not only is this subject covered from an

engineering and installation standpoint, but, in addition, the author has taken up gas heating, combination heating, forced air heating, humidity, chimneys and flues, coal as a fuel, and similar topics.

As a foundation for this work, a rather complete explanation of the subject of heat is given, with particular reference to what constitutes the unit of measuring heat, how



Second Floor of Fowler, Indiana, 2-Flat Building that Does Not Heat

heat is lost from a building, and the relative heat-losing capacity of different types of building construction. This chapter on heat losses is devoted to presenting a clear understanding of this subject of measuring the heat required for a building regardless of the system of heating employed.

With a view to making the book complete, the author has given a brief outline of the history of warm air heating, and then a description of the different types of warm air furnaces. The chapters on this subject and on the details of furnace construction will enable even the layman to have a clear understanding of furnace design and construction.

Then follow chapters which give evidence of the author's study of the results of research work. In them are to be found data to enable the furnaceman to design an efficient furnace heating installation, with respect to the size of the furnace needed, as well as the sizes of leaders, stacks, registers and the like. As an example of the detail with which the subject is treated, it might be stated that there is one chapter devoted to casing diameters in their relation to furnace capacity.

All that has been mentioned in the foregoing, while known to a degree by the experienced furnaceman, is highly essential to the student or beginner. Probably the experienced furnaceman will be more particularly interested in that part of the book which deals with the subject of humidity, combination heating systems, hot water supply, forced air heating and gas warm air heating. In fact, this type of furnaceman will also be interested in the author's treatment of chimneys and flues, and coal as a fuel. Although material has been published on these subjects in various publications, there are collected in this one book such data on these several subjects as should be possessed by every competent furnaceman.

This is a work which bears evidence of protracted study by the author and thorough familiarity

with the subject. It is unquestionably the greatest contribution that has ever been made in compact form to the furnace industry.

The book comprises 416 pages of text having a direct application to the design and installation of warm air furnace heating systems. To these have been added some 30 pages in the appendix, comprising the Standard Code, useful tables, and other helpful material. Special mention might be made of a rather comprehensive list of trade names of furnaces, a convenience to the

dealer in need of repairs for any somewhat old installation.

This work is entitled "Warm Air Heating." Its author is A. M. Daniels. The page size of the book is 6 by 9 inches and it is generously illustrated with diagrams and comprises many convenient tables. It is bound in a semi-flexible grain leather, red Fabrikoid cover, and retails at \$5.00 per copy, postpaid. The book can be had through the book department of AMERICAN ARTISAN. Place your orders now to insure prompt delivery.

P. A. Johnson, of Chas. Johnson, Inc. Peoria, Dies After Long Illness

***Was 60 Years of Age—Was Very Active
in Association and Local Civic Affairs***

THE forthcoming Illinois Sheet Metal Contractors' convention and the convention of the National Association of Sheet Metal Contractors at Dallas will miss the presence of Peter A. Johnson, vice-president of the Charles Johnson



Peter A. Johnson

Company, Inc., Peoria, Illinois, this year. Mr. Johnson passed away at his home, 116 Bourland Street, Peoria, Friday, February 11, 1927, after an illness which had kept him confined to his bed for several months.

Mr. Johnson was 60 years old. He was born at Elmwood, Illinois, August 24, 1866.

At the age of 19 he moved from Elmwood to Peoria, Illinois, and entered the hardware business. On August 23, 1891, he was married to Miss Henrietta Riegel. At the time of his death he was vice-president of the Charles Johnson Company, Inc., manufacturers of warm air furnace pipe and fittings.

Mr. Johnson was not only well known in the hardware, sheet metal and warm air furnace trades, but he was also considerable of a figure in political and civic activities in and around Peoria. He was alderman of the Sixth Ward, Peoria, for two terms and city treasurer.

He was a member of the Temple Lodge, No. 46, A. F. & A. M.; Peoria Consistory, Shrine; Baker Camp of the M. W. of A., and Central City Chapter, Order of Eastern Star.

Mr. Johnson was very active in association work within the industries of which he was a part and had made a host of friends by the good work which he had done.

In addition to his widow, Mr. Johnson leaves four daughters and six grandchildren to mourn his death. He was buried in Springdale.

South Dakota Man Thinks Green Bay Furnace Too Small

Wants to See Problem Thoroughly and Exhaustively Discussed

FOR many years I have been reading the *AMERICAN ARTISAN* with interest, and have always held it to be the outstanding champion of the warm air heating industry. From its instructive columns many sheet metal men have obtained valuable information and have had their baffling problems solved. The writer wishes to be ranked among these men and desires to sincerely thank you for the benefits thus received.

However, it appears to me that some of the questions and controversies of importance have not been exhaustively discussed or brought to logical and generally accepted conclusions. One of the problems thus suspended, as it were, was that of the cause of air circulation. As I remember it, the discussion was vigorously attacked by a Mr. Freed

and a Mr. Scott. I believe that there was a university professor in the lists also, but to me the final and proven basic causes were left suspended. It appeared to me that two of the contestants in the case took vicious thrusts at each other and quit. Then Mr. Freed asked a series of questions which were answered by the professor with candid courage, but some of them perhaps not correctly.

Since the beginning of the research work at Urbana it appears that men of education and marked ability have entered the warm air heating industry or perhaps the research work has uncovered them or "brought them to light."

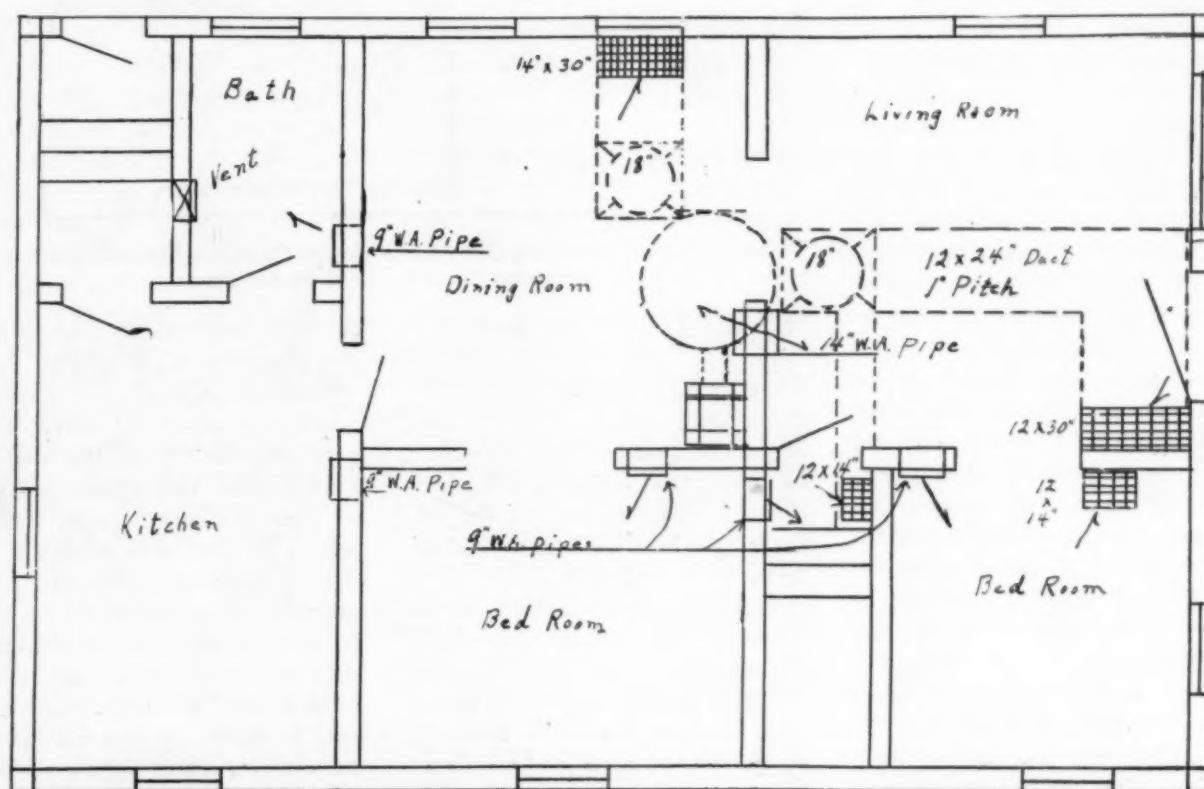
This later fact is made apparent in that there has been more real progress made in the industry during the past five years than in the

thirty years preceding this period. The fact is evidenced also by the scientific discussions by men actually engaged in the industry.

It is probable that these well informed men have been with us for a long time, but have been content to carry on without disseminating information until the research bureau showed the benefits of co-operation of men mutually interested.

What I should like to see is that when a question is brought up by a "furnace" man the complete and correct answer be furnished him with conclusive proof and reasons. I am certain that for every problem there is some well informed man among your readers who could do this with profit to himself and those who need the help.

The practical problems are of



Layout of Green Bay Warm Air Furnace Installation as Frank McKay Would Rearrange It, the "Reversing" of the Cold Air Ducts

more importance to the "rank and file" of furnace men than are the scientific questions.

One of the practical problems in which I have been interested is that of the Green Bay Hardware Company, Green Bay, Wisconsin, wherein the warm air comes through the return air ducts. As you have stated, there is insufficient information given, in order that the exact cause may be given and suggestions made for the correction of the fault.

There are, however, some general causes, one or more of which will in all probability apply to this case. It is very apparent that if the cold air pipes take off from the horizontal ducts, as indicated in the plan as shown in your January 15th issue, the cause is partially due to the fact that the vertical pipes are too small and there is too great a difference between pipe diameter and width of the ducts.

Then the take off is too abrupt; that is, there appears to be no transition from duct to pipe. The pipes may be brought too near to the furnace casing, with the shoe having a very short throat and "cut under" back.

The most likely cause of this condition of reverse circulation is a furnace too small for the job, especially if it be a cast furnace. The casing may be too small for the heating unit also, or the bonnet too low down, with insufficient room for air expansion. In installations where joist spaces are used as return air ducts and there is no transition, or pocket, and the vertical pipe to the shoe is taken off so that the opening partially covers the two joist spaces, there is great probability of warm air coming up through the cold air register if the wrong type of shoe be used and too small a cast furnace is installed.

Now, I do not want to give the impression that a cast furnace is inferior to any other type as a warm air heating unit and will try to explain the reasons for my opinion as applying to this particular case.

It is obvious to all of us that the

most intense radiating portion of a cast furnace is the fire pot; while in steel furnaces all fire pots are lined with heavy brick or castings, some of them with considerable air space between the lining and the body of the furnace, thus rendering the fire pot a very inefficient radiator.

Furthermore the fire pots of practically all cast furnaces flare more or less toward the top, while all steel furnace fire pot portions are vertical. If a cast furnace pot

case," complete reverse circulation.

When the fire pot is glowing or almost so and the furnace casing has absorbed so much heat as to become quite hot, there is very little circulation of air through the circulating system of the plant. There is usually one or more of the warm air pipes acting as a cold air duct and the air thus entering the casing is warmed and returned up the other warm air pipes. Upon very careful test it will be found that

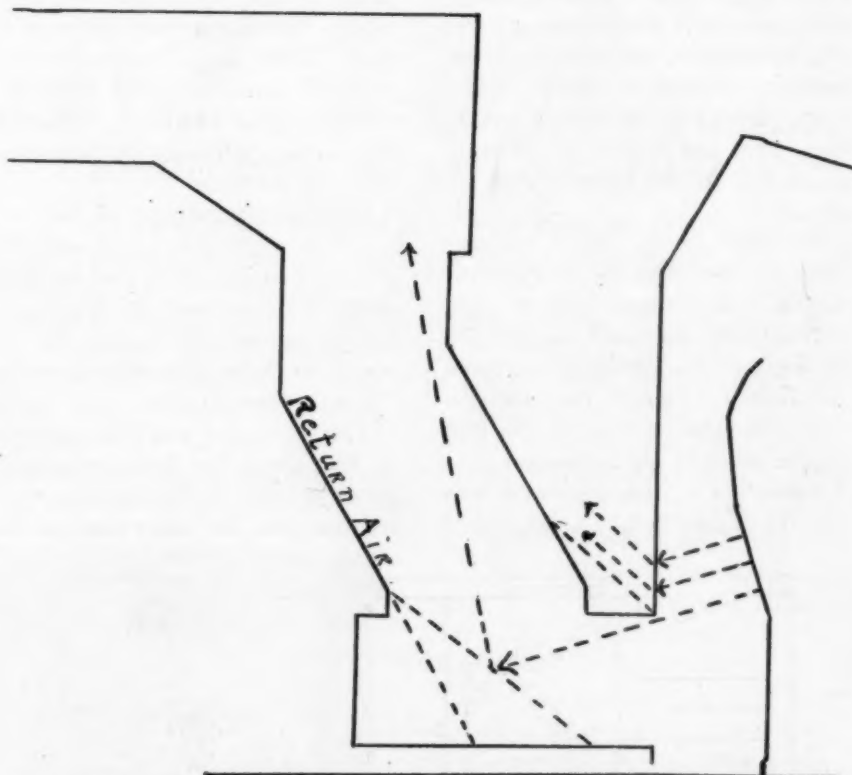


Diagram of Air Currents as These Are Reflected From the Furnace Fire Pot and Sent Out Through the Cold Air Ducts

becomes so hot that it glows or is "red hot," the heat rays are reflected to the bottom part of the casing and into the cold air shoe. If the casing be too small, there will be little or no room for the air to circulate upwards to cool the casing, so the heat is absorbed and the metal becomes hot.

The heat rays are reflected to the bottom of the cold air shoe and to the back also if the shoe throat be too short and the back be cut under. This condition reflects the heat rays up the cold air pipe, and where the depth of the ducts is so much less than the width there will be "Eddy" currents and, as in this "Green Bay

there is somewhat the same condition obtaining in the cold air ducts.

There is still another condition which may affect the "Green Bay" case and that is the fact that the kitchen and bath rooms are shut off from the other rooms, with no return air duct near enough to the door of either room to cause circulation. One of the warm air pipes to these rooms may be delivering cold air to the furnace and, if this be the case, the entire circulation may be upset. A vent out through the roof in either of these rooms will correct this fault.

The intermittent aspect of this installation is probably due to the

firing of the plant. It is probable that the fire is permitted to burn high up in the pot one day and the next the fire is shaken down into the grate; thus one day the fire pot is comparatively cool, while the next day it glows.

There are some steel furnaces which will cause heating up of the lower part of the casing and if one or both of the cold air shoes be placed too near to the front on this type of furnace the same conditions will obtain as in the cast furnace installation.

The sketch of a plan for this installation accompanying this letter is based on the information which I have been able to glean from the plan in your January 15th issue and shows just about how I would install the job in the Green Bay region.

The return air intake from the north part of the house is placed as near to the front door as is possible, for the reason that when the north wind blows at Green Bay there is likely to be a draught from this door.

In my practice I have found it better to place this intake where there is likely to be air leakage rather than excessive radiation, such as would be caused by a large north window. There was a time in all parts of the country when it was good practice to place a return register near to a large window thus located, but with our present day modern methods these windows are better fitted and storm sash is used, so that this radiation is of less importance than the leakage as a circulation factor.

It will be noted that I have indicated separate warm air runs to the bed rooms. This has not been offered as a corrective for the fault in this plant, but as a valuable suggestion in all warm air installations. In my opinion it is not good practice to put a bed room or a bath room on the same pipe with any other room.

In the profile sketch indicating the vertical take off and shoe connection to the furnace I have somewhat exaggerated the idea for lu-

cidity of the effect of radiation from an overheated fire pot and not as a suggestion for actual practice. However, a less pronounced method of this type is correct. The broken lines shown in this profile indicate how the heat rays act in the wrong type of shoe.

The foregoing suggestions are simply my contribution in the matter of reverse circulation and are

not offered as a positive remedy for the case in question, because the information is too meager for anyone to be positive in the case.

FRANK MCKAY.

P. S.—Since beginning this letter I have read your February 5th issue and am pleased to note that Mr. R. C. Bates is interested in having the furnace man's problems definitely worked out.

How the Doubt in Warm Air Heating Has Been Removed Must Appreciate Work of Men Who Put Standard Code Over

By GEORGE T. SISLER, May-Fieberger Furnace Co.

THERE is no doubt left concerning the Standard Code as the proper basis, so far, for all "warm air" installation. The National Warm Air Heating & Ventilating Association, through the efforts of Professor Willard and associates, have accomplished, by affiliation of manufacturers, what perhaps would never have been accomplished by individual manufacturers.

This noble work is and should be appreciated, also an untiring continuance is of absolute necessity to insure the future of the industry. No thought should be given toward letting up in the effort for further research, and a closer co-operation between this association of manufacturers and their dealers.

In fact, the benefit derived from this research is of no avail unless it does accomplish that particular purpose.

This co-operation is so essential that it has no place in the background of our thoughts, and while all other efforts toward all other purposes are good, yet they are really secondary to this matter of benefit to the dealer. Through the dealer the benefit goes to that greatest of parties, the ultimate of our aim, the home owner.

Why "research," why "standard code," in fact, why anything if after all we have done we neglect to see that our effort is accom-

plished in the *proper installation* of warm air furnaces in the home of the individual who is in reality the *judge* of all we have tried to do. With him and in his hands you place the evidence which will either convict you of gross neglect or crown you with that success which is commensurate with the results.

The men who have labored, the manufacturers who make up this association, are deserving of success, and success will eventually crown their efforts, I truly believe, and when it does it will be because they have put their *individuality* aside, their desire to advance their particular interests, appreciating that when the ultimate is reached this end will be accomplished also.

To this end must we look and to this end must we move, with the determination that whereunto we have set our face we shall press forward toward that mark which is the hope of every manufacturer, the prayer of every salesman (and they need to pray, for upon these rest the burden), the desire of every honest dealer, viz., the satisfactory installation of, not yours nor mine, but the warm air furnace in the home of the man who pays for all we are doing.

Don't you think he deserves it, and isn't it worth working for?

I trust, therefore, that he, our final judge (the home owner), might say—Well done.

The Meaning, Limitations and Application of the Heater Rating Formula

By V. S. DAY

IN the monthly bulletins of the National Warm Air Heating and Ventilating Association for April, 1925, and July, 1926, there were published two articles showing the derivation and application of a proposed Warm Air Heater Rating Formula.

Now the association, acting on the recommendation of its Code Committee, has adopted a rating formula of identically the same form and based on the University of Illinois proposal, but *discounted approximately 14 percent*. This discount or reduction in the rating value of the formula was based on the belief by the committee, acquiesced in by the University, that operating conditions in the experimental plant were somewhat better than could be expected in the average installation for which the rating could be expected to apply.

The Derivation of the Formula

The adopted formula is as follows:

$$L = 1.75 G [1 + (\text{or } 1 -) 0.02(R - 20)] \text{ in which,}$$

L=square inches of pipe connected to furnace.

G=grate area in square inches.

R=ratio of heating surface area to grate area.

1.75—a constant based on the results obtained in the Association Research on a furnace having 20 square feet of heating surface for each square foot of grate, and including factors for:

E, efficiency of heater

C, combustion rate

F, calorific value of fuel

0.75, percentage of heat available at registers

136, B.t.u. delivering value of one square inch of pipe, assuming half of heat is

sent to each floor. This value is based on an operating temperature of 175° F at the register.

144, to convert square feet to square inches.

Considerable space was devoted in the April, 1925, and July, 1926 *Bulletins* to the mathematics by which these factors were combined into a simple formula.

Literal Interpretation of Formula

Literally the formula means that a furnace having 20 square inches of heating surface for each square inch of grate area, may be allowed 1.75 square inches of pipe for each square inch of grate. Furnaces having heating surface to grate area quotients, or ratios, above 20 may be allowed 2 percent increased capacity for each unit that the ratio exceeds 20, and likewise shall be penalized 2 percent for each unit that the ratio falls below 20.

Stated in other words, the rating is 1.75 times the grate area with a correction of 2 percent for each unit that the heating surface grate area ratio exceeds, or is less than 20.

The formula shows that for the basic furnace having 20 square inches of heating surface for each square inch of grate the rating is 1.75 G. The experiments at the University of Illinois showed that 2 percent could be added for an R value of 21, 10 percent for an R value of 25, or 2 percent for each unit that R exceeded 20. Likewise it was shown that a deduction of 2 percent was necessary for each unit that R was less than 20.

Basic Factors and Limitations

The formula contains two variables G and R capable of widely different interpretation with the intricacies of various furnace constructions, and an understanding of the following basic conditions is necessary to a correct application of the formula.

(a) Four furnaces were tested in the process of establishing the formula. All were of common types, free from special devices. Therefore the formula could be expected to apply only to furnaces of standard, rather than unusual, designs.

(b) The grate area, G, in all cases was the area within the firepot at grate level, or practically the bottom diameter of the firepot. Claims for increased grate on account of slotted firepots, cones, or other devices should not be made. Such devices are intended to increase the efficiency of combustion rather than the quantity of combustion. The grate area determines the quantity of combustion. Therefore grate area should not be increased to allow for combustion-efficiency devices. In the adopted form the rating formula does not provide for combustion-efficiency devices, and ratings can only be accurately adjusted to account for their advantages, or disadvantages, after they have been tested.

(c) Secondary air devices for increasing the efficiency of combustion and eliminating smoke can not be accommodated by the rating formula, and any increased or decreased rating for their use must be determined by test.

(d) In the case of extended surfaces, ribs, plates, fins, studs and other devices intended to increase the efficiency of transmission of heat to the air, only additional test work can indicate the value of such parts, and the adjustment to be made in the rating when they are used.

However, the Code Committee must agree on an interpretation of "heating surface" before rating can begin on an equitable basis.

None of the furnaces tested in the University research had extended surfaces except for small bolting lugs, or ribs necessary for

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structural reasons. Hence, the heating surface was the outside area of those parts, above and beyond the grate, which were exposed to fire or combustion products on one side, and to the air stream on the other side.

(e) The test furnaces had heating surface-grate area ratios varying from 17.5 to 27.4 and the rating formula can not be guaranteed to apply perfectly outside of this range. However, very few furnaces have been found with R values outside of the limits 17 to 28, and few are liable to be affected by this limitation.

Application to Typical Problems

The application of the formula is a matter of simple arithmetic, and amounts to taking 1.75 times the grate area and adding a 2 percent correction for each unit that R exceeds 20. The measurement of the heating surface area is a difficult task and there is no easy method. Painstaking measurements and mensuration, or painstaking application of paper or foil to the surface are the only resources.

Application of the formula to two actual problems, submitted by members of the National Warm Air Heating and Ventilating Association, will serve to illustrate:

	Problem 1 Positive Correction	Problem 2 Negative Correction
Grate diam., in. =	21	21
Grate area, sq.in. =	346	346
Heating surface area, sq. in. =	7540	5665
R, ratio heat surface grate. =	21.8	16.4
(R-20) =	1.8	-3.6
Correction for R, percent. =	3.6	-7.2%
1.75 G. =	606	606
Rating = 1.75G		
+correction =	628 Sq.In.	562Sq.In.

Effect on Design and Ratings

The correction for heating surface will in most lines of furnaces have the effect for reducing the ratings on the larger sizes and increasing the ratings on the smaller sizes. The limitations on height and the necessity for minimizing weight in the larger sizes means that in most lines the larger sizes will be handicapped by relatively small values of R. Thus the formula has the effect of narrowing the range of furnace capacities. In

other words the ratings for the larger sizes will not increase in proportion to their grate or firepot sizes nor to their weights.

In the design of new lines it will be advisable therefore to study the furnace proportions in advance in order to obtain the widest possible spread in capacities.

There are two obvious methods of increasing the ratings; one by increasing the grate area, G, and the other by increasing the heating surface area and R. Increasing only the grate area, G, is the most effective means of increasing the rating; but such increased rating will be accomplished at decreased efficiency for the heater, on account of the decreased value of R which will result. On the other hand increasing the heating surface area will give increased heater efficiency, but with less pronounced increase in rating than can be accomplished by increasing the grate. The condition is shown in the following comparison:

Case A Increasing grate, fixed heating surface area = 6280 square inches.

Grate Area	Percent Increase in Grate	Rating	Percent Increase in Rating
282.6	-10	516	-6
314	0	550	0
345.4	10	583	6
377	20	615	12

Case B Fixed grate, 20 inch, increasing heating surface.

Heating Surface	Percent Increase in Surface	Rating	Percent Increase in Rating
5652	-10	528	-4
6280	0	550	0
6908	10	572	4
7536	20	594	8

Thus it may be seen that equal increases in grate area bring about greater increases in rating than increases of the same percentage in heating surface. The comparison shows that 10 percent increases in grate area are accompanied by 6 percent increases in rating, whereas 10 percent increases in heating surface are accompanied by 4 percent increases in rating. Furthermore a 10 percent addition in heating surface is difficult to obtain with the constructional limitations involved. It should be borne in mind that the

Case A furnaces would be less efficient than the Case B furnaces which by virtue of their large heating surfaces more completely transmit the heat of the combustion gases, and the radiant heat.

J. C. Henning Has Again Gone with the Globe Stove and Range

Mr. J. C. Henning has again returned to the personnel of the Globe Stove and Range Company, Kokomo, Indiana. Mr. Henning will travel southern Illinois territory. He was formerly with the Globe Stove and Range Company, but for the past five years has been interested in politics. His return to the warm air heating industry will be heralded with great joy by his friends in the industry.

To Determine What Business Figures Will Be Best Needs Barometer

As a means of determining with some degree of accuracy what the country will need in the way of commodities and manufactured supplies of all kinds the Department of Domestic Distribution of the U. S. Chamber of Commerce has set itself to the task of determining what business figures will serve the purpose of a business barometer.

Hand-to-mouth buying, keeping only a pace ahead of actual popular needs, has transferred the burden of preparing for the future from the merchant to the manufacturer. The retailer buys less. The multiple warehouses, represented by his stock rooms and display shelves, are no longer overcrowded. His reserve stocks the jobber may carry, but jobbers' warehouses are no longer bulging.

The manufacturer protests that he cannot regulate his production and adjust it to this uncertain demand. He cannot manufacture a steady flow of goods without assured outlets to relieve his stock rooms.

He is groping pretty much in the dark because he has only vague information concerning the number of wholesale and retail establish-

ments, the amount of sales—in brief, what the public needs and how rapidly its needs are being supplied.

What business figures are necessary to present an adequate picture

of trade at given intervals is the question which the National Chamber has taken up with a view to determining when bad business weather is brewing and it is advis-

able for the manufacturer to reef his sails or to put out more canvas to keep pace with public demand in the way of the right style of products.

Illinois Retail Hardware Men Meet in Chicago

Many Valuable Sales Pointers Taken Home by Attending Members

THE Thirtieth Annual Convention of the Illinois Retail Hardware Association was held this week at the Hotel Sherman, Chicago, Illinois. The formal opening of the convention took place on Tuesday morning in the main ball room of the hotel, with Julius Noltling, of Elgin, Illinois, reading the invocation.

President J. A. Van Nattan, Springfield, Illinois, in his annual address on "The Future of Retailing," which dealt with the subject of chain store competition and how to combat it. Some very valuable sales recommendations were made by President Van Nattan.

Buying and Selling Problems were discussed by Dean C. M. Thompson, of the University of Illinois.

"Three points struck me forcibly," said Mr. Thompson, "after I had studied the hardware man's problems, and these are: 1—The high average of intelligence of the retail hardware man. 2—The strength and power of the national and state hardware associations. 3—The seriousness of the hardware man's problems, among which are:

"(A) *Credits*. The hardware dealer will find it to his advantage to co-operate with his local Chamber of Commerce and his own trade associations in forming a Credit Bureau to meet and combat the evils of unlimited credit extension to the consumer.

"(B) *Installment Buying*. This is another evil the dealer must face. It is nothing more or less than cash buying with deferred payments.

The danger is in building a machine so large that when all is installment buying the result will be disastrous.

"(C) *New Methods of Market Distribution*. Mail order houses, chain stores. The system which serves best is the one which will prevail. The thing for the dealer to do is to study the methods of the mail order and chain store; choose the best and discard the others. Above all, remember that the hardware retailer has the advantage. He holds the strategic position because he renders his customers *personal service*. We all like to buy from the man who we know to be willing to stand back of his goods and who is willing to give us service.

"(D) *Constant Change in Style, Habits and Tastes of the Buying World*. Study conditions and keep yourselves posted on what is going on.

"(E) *Agricultural Questions*. When farmers' purchasing power is low it naturally affects all phases of business. What is needed here is an equalization of the distribution of the national income.

"(F) *Place of the Retailer in Modern Business*. The retailer is a modest man, with a dislike for fighting back. Retailing is one of the most important functions in production. Do not apologize for taking a legitimate profit. If you were not rendering service, goods would pass through other channels than yours to the customers.

"The retailer has nothing to be ashamed of. He performs a great function in the economic line. He should be proud of his business and

proud of his organization. When he realizes this many of his troubles will disappear. By close co-operation and the placing of his problems in the hands of men capable of handling them he will rebuild confidence in his industry."

At the afternoon session William Bethke, LaSalle Extension University, Chicago, spoke on the "Present Business Tendencies."

"Merchandising Team Play" was the topic which Price Bondurant, Great Bend, Kansas, had selected as his topic. In this he spoke of making the clerks feel that they are a part of the organization and that the success of the organization depends upon the manner in which their work is conducted. C. J. Whipple, president of Hibbard, Spencer & Bartlett Company, Chicago, and D. A. Merriman, president of the American Hardware Manufacturers' Association, were also on the program for Wednesday morning.

On Wednesday afternoon the entire convention was given over to the exhibitors.

Thursday morning the speakers on the program were R. W. Carney, Wichita, Kansas, who spoke on the "Weakest Link"; "Modern Display Methods" was discussed by H. H. Daughters, Painesville, Ohio, while the discussion which followed by the assembly was directed by Mr. Daughters.

"What's Coming" by P. J. Stokes, Indianapolis, and "Diligence in Business" by Hobert R. Beatty, Clinton, were the main topics of address during the Thursday afternoon session.

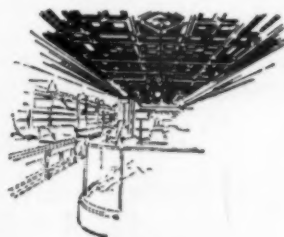


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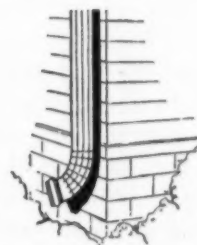
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Ohio Retail Hardware Men Hold Successful Meeting at Columbus

Many Topics of Interest to Small Hardware Man Were Discussed

THE Thirty-third Annual Convention of the Ohio Hardware Association was held at Columbus, Ohio, February 15 to 18, 1927. Headquarters were in the Deshler Hotel, while the annual hardware show was held in the Memorial Hall.

The meeting was called to order by President Martin Mansfield, after which came an address by Rev. Samuel S. Palmer, pastor of Broad Street Presbyterian Church, Columbus, on "Idealism in Business."

In the evening of the first day's session the ladies were entertained at a playlet and concert given by the Saturday Music Club at the Elks Hall, under the direction of the local convention committee. While the ladies present were thus being entertained, a meeting was held in the assembly room of the hotel with Martin presiding. An address on "Cultivating Pleasant Business Relations" was delivered by Cyrus Locher, Director of Commerce, State House, Columbus.

Following the discussion the remainder of the evening was spent in a general reception with music and dancing in the ball room of the hotel.

Wednesday morning at 8:00 the President held a breakfast at the Neil House. These family breakfasts are always a grand success and are well attended.

Two addresses were scheduled for the morning session. One of these was on "What Research Does for the Retail Hardware Dealer," by Spurgeon Bell, director of the Bureau of Business Research of the Ohio State University.

The second address, by George V. Sheridan, executive manager, of the Ohio Council of Retail Merchants, dealt with the questions of changes in the law regulating the

sale of seeds in hardware stores.

Present business tendencies were discussed on Thursday morning by R. J. Atkinson, vice-president of the National Retail Hardware Association. In this address Mr. Atkinson was scheduled to take up high pressure selling methods, the leisure loving American and his requirements for necessities and for pleasure, how the changing habits of the public affect the hardware stores, the growth of the chain stores and whether they will enter

the hardware field to any great extent.

How to determine the best medium for getting publicity, the best methods of interesting the country trade, and can the small merchant advertise effectively are questions which were discussed by R. A. Chandler.

On Friday such matters as election of officers, installation of officers, unfinished business and visits to the exhibitors were indulged in by delegates.

Furnace and Sheet Metal Exhibits at Hardware Shows

Conventions Held at Minnesota, Ohio and Illinois—Displays Excellent

THE warm air furnace, sheet metal and supply manufacturers exhibiting at the Illinois, Ohio and Minnesota hardware conventions this week staged some very attractive displays. Those of our friends present were as follows:

Exhibitors at Illinois Hardware Convention.

American Steel Wire Company; wire fence, steel posts, nails and wire products. Representatives, S. R. Hanna, T. Haskell, G. Scott, S. N. Clover, W. Taylor and C. A. Cochrane.

Barnes Zinc Products Company; elbows, conductor pipe, eaves trough and fittings. Representatives, A. W. Richards, W. J. A. Hern and A. M. Jaeger.

Brillion Furnace Company; furnaces. Representatives, Fred Bloomfield and Mark P. Ohlson.

Carr Supply Company; furnaces and registers. Representatives, C. S. Mott, Dale V. Carr, Howard L. Mason and DeWitt Van Evera.

The Excelsior Steel Furnace

Company; furnaces, registers and fittings, stove pipe and elbows. Representatives, W. J. Prendergast, Joseph Goldberg, J. P. Brooks and C. E. Glessner.

Fox Furnace Company; cabinet heaters and furnaces. Representatives, E. Weidemann, M. H. Klett and E. A. Grange.

Globe Stove and Range Company; furnaces, ranges, parlor furnaces, gas and gasoline pressure ranges. Representatives, N. B. Faver, M. A. Brown, J. H. Cyrus, I. O. Henning, G. W. Beale, H. A. Beaman and Wm. A. Cooper.

Hero Furnace Company; furnaces. Representatives, H. E. Clutterham, James Boyle, J. V. Patten.

International Heater Company; furnaces. Representatives, D. E. McCabe, Les Taylor, J. M. Beech and T. Reid Mackin.

Liberty Foundry Company; Mellow furnaces. Representatives, Geo. Mellow, H. C. Cochran, M. Braunston.

Milwaukee Corrugating Com-

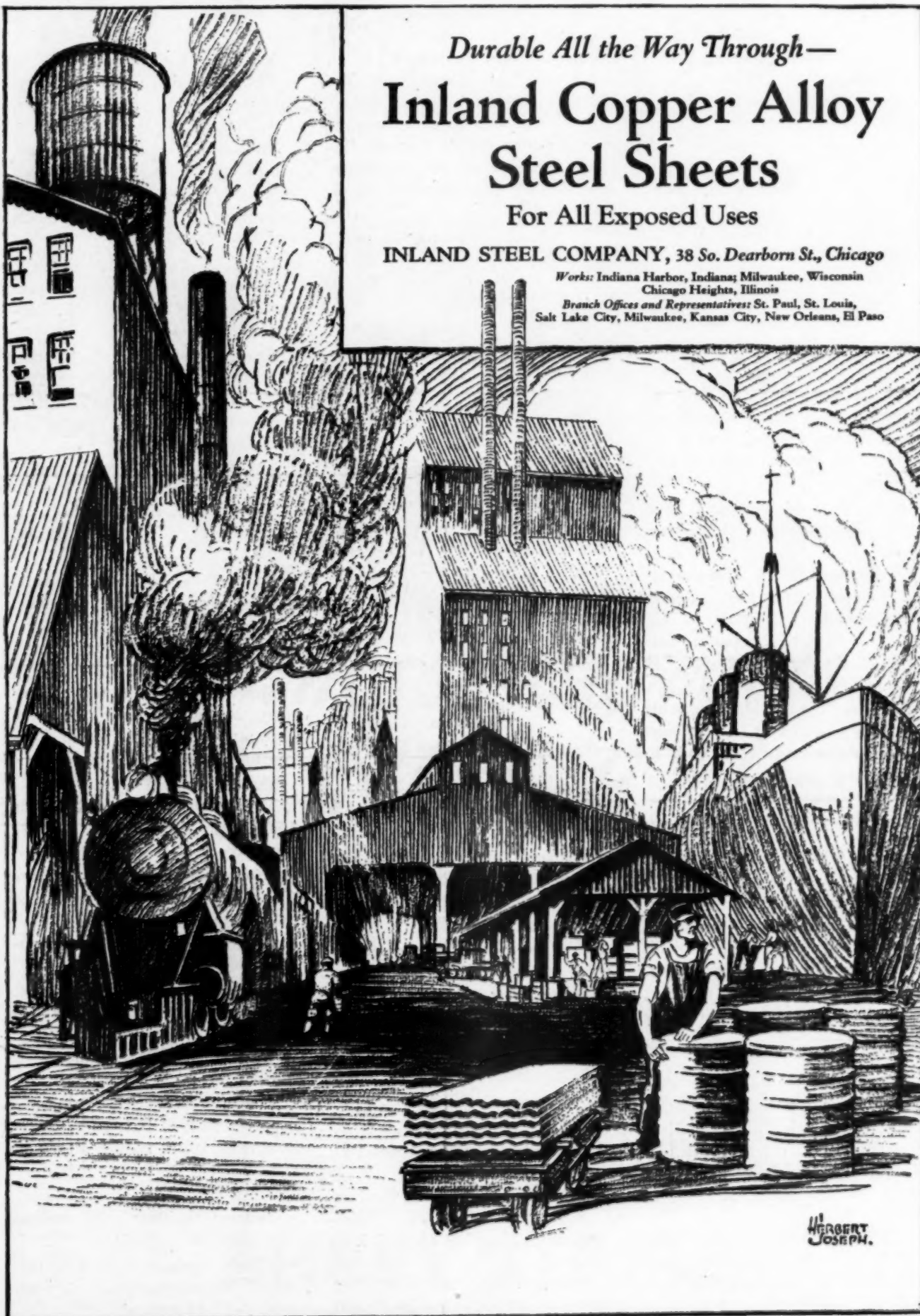
Durable All the Way Through—
**Inland Copper Alloy
 Steel Sheets**

For All Exposed Uses

INLAND STEEL COMPANY, 38 So. Dearborn St., Chicago

*Works: Indiana Harbor, Indiana; Milwaukee, Wisconsin
 Chicago Heights, Illinois*

*Branch Offices and Representatives: St. Paul, St. Louis,
 Salt Lake City, Milwaukee, Kansas City, New Orleans, El Paso*



HERBERT
 JOSEPH.

Mention AMERICAN ARTISAN in your reply—Thank you!

pany; furnace fittings, stove pipe and elbows and trimmings, fire-proof construction material. Representatives, W. F. Waller, B. C. Jones, W. H. Peterson, E. G. Holly, Ray Chamberlin, L. H. Soper and L. O. Armstrong.

Monitor Furnace Company; furnaces and oil burning furnaces. Representatives, A. P. Wandschneider, J. C. Cooney, William Hanley and H. B. Deakings, Jr.

L. J. Mueller Furnace Company; furnaces, registers, pipe and fittings. Representatives, Arthur D. Greig, Geo. Meyer, Wm. A. Tell, W. H. Turner and J. J. Callahan.

Robinson Furnace Company; furnace and fittings. Representatives, Harvey Manny, Fred Schuberth, Tom Pearson and "Worth" Dunning.

Rudy Furnace Company; furnaces. Representative, H. R. Harrison.

Tuttle and Bailey Manufacturing Company; registers. Representative, John T. Barclay.

Utica Heater Company; furnaces. Representatives, A. F. Hem and G. N. Johnston.

Yale & Towne Manufacturing Company; latches and cabinet locks. Representatives, Frank C. Martin and Matt Spoor.

U. S. Register Company; registers. Representative, Charles J. Pearson.

Exhibitors at Ohio Hardware Convention.

Fox Furnace Company; furnaces and cabinet heaters. Representatives, W. L. Tulbert, Geo. M. Thomas and E. H. Skinner.

Globe Stove & Range Company; furnaces and ranges. Representatives, E. L. Kokenge, L. S. Fisher, Mark A. Brown, Chas. R. Curlee, H. B. McKee and C. H. Bowen.

International Heater Company, Utica, New York; furnaces. Representatives, B. W. Cornelius, H. F. Randolph, Jas. L. Carr, Geo. T. Long, W. R. Smith and R. B. Smith.

W. E. Lamneck Company; pipe and fittings. Representatives present, A. L. Bauer, Earl W. Lamneck.

Monitor Furnace Company, Cincinnati, Ohio; furnaces and oil burners. Representatives, I. C. Livingston, Mr. Mace and Mr. Baruch.

Mt. Vernon Furnace Manufacturing Company, Mt. Vernon, Illinois; furnaces, stoves, coal chutes and doors. Representative, R. S. Thompson.

L. J. Mueller Furnace Company; furnaces. Representatives, R. M. Moffit, E. B. Lau and T. D. Knapp.

Peerless Foundry Company, Indianapolis, Indiana; furnaces. J. R. Strahlendorf and J. J. Cornwell.

F. O. Schoedinger, Columbus, Ohio; ventilators and sheet metal products. Representatives, Edward H. Erk, Robert Frass, Joe Coughlin and Robert Davies.

Thomas and Armstrong; furnace and troughs. Representatives, Charles H. Saunders, J. W. Ketchum and "Tom" Pearson.

Wheeling Corrugating Company; galvanized ware. C. T. McGough, Jos. Hodge, G. D. Gribble, Ray Rensluk and E. A. Clare.

Exhibitors at the Minnesota Hardware Convention.

L. J. Mueller Furnace Company; furnaces, registers and fittings. Representatives, F. W. Schwartz, E. E. Johnson, T. J. Taunton and J. H. Bazille.

Premier Warm Air Heater Company; furnaces. Representatives, Frank Nelson, Harry Frey, Joe Worth, R. D. Strickler.

U. S. Register Company; registers, furnace pipe and fittings. Representatives, R. Rodman and H. J. Somers.

Rock Island Register Company; registers. Representative, J. J. Burgess.

R. J. Schwab & Sons Company; furnaces. Representatives, Alfred G. Pomrening, Tom Mathewson and Jud Elston.

Youngstown Steel Products Company; well supplies. Representatives, Oha C. Cox and I. G. Crocker.

American Steel and Wire Company; wire fences and steel posts.

Representatives, G. W. Anderson, H. Field, N. A. Yunker, Frank Gehr and E. J. Cofield.

The Beckwith Company; circulators and ranges. Representatives, J. F. Nugent and William Kelso.

Badger Corrugating Company; sheet metal building products. Representatives, E. N. Knothe, Gust F. Sexauer, C. B. Sexauer, L. Nelson and Roy Nelson.

E. C. Dunning, Incorporated; registers, pipe and fittings. Representatives, R. O. Aton, G. F. Levzow and R. Buege.

Green Foundry and Furnace Works, Des Moines, Iowa; furnaces, registers, pipe and fittings. Representatives, F. R. Vaughn and S. E. Colby.

The Lennox Furnace Company; furnaces. Representatives, Roy T. Wasson, Fred S. Hynds, P. J. Schwie, H. P. North and H. A. Probst.

Marshalltown Heater Company, Marshalltown, Iowa; furnaces. Representatives, D. E. McVey, H. O. Lee, N. H. Patch and David Lennox, Jr.

Milwaukee Corrugating Company, Milwaukee, Wisconsin; furnace fittings and sheet metal. Representatives, John Schole, T. S. Graves, C. E. Graves.

Minneapolis Heat Regulator Company; thermostats. Representative, F. E. Snowberg.

Minneapolis Stove and Furnace Company; ranges. Representatives, Edward Karr, T. Lunde, B. W. Christenson, T. Meenan and Samuel Goldman.

Moore Brothers Company, Joliet, Illinois; furnaces, heaters and ranges. Representatives, Ira J. Kuhter, Edward Marsh and A. J. Tinkler.

The Monitor Furnace Company; furnaces and oil burners. Representatives, W. L. Harvey and J. H. Gibson.

Tuttle and Bailey Manufacturing Company; registers. Representative, William P. Laffin.

Homer Furnace Company; furnaces. Representatives, C. A. Phillips, P. H. Hammond.



For those early roofs and gutter spouts...

Right now is none too early for the alert sheet metal contractor to begin casting about for roofing jobs. The earlier the start for orders, the earlier will the roofing business open up in full swing.

This Spring as never before the public will be found receptive to the Sheet Steel idea. Persistent advertising has taught householders the advantages of Sheet Steel, and a definite understanding of its merit will be found when the subject of roofing is discussed. Sheet Steel for roofing and gutter-spouts appeals to the average householder because of its fire-resistivity and the protection it affords against lightning.



This trade-mark stenciled on galvanized Sheet Steel is definite insurance to the buyer that every sheet so branded is of prime quality—full weight for the gauge stamped on the sheet—never less than 28 gauge—and that the galvanizing is of the full weight and quality established by the SHEET STEEL TRADE EXTENSION COMMITTEE specification.

Its permanent character as a material is also a feature which attracts the householder due to low cost and durability.

Every Sheet Steel contractor going after roofing business should impress upon his prospects the desirability of using Sheet Steel in adequate gauges for exposed service. The furthering of this idea reflects credit upon contractors who spread it because of the obviously better service from roofing installations utilizing galvanized sheets in adequate gauge. For specific details regarding Sheet Steel, write the SHEET STEEL TRADE EXTENSION COMMITTEE, OLIVER BUILDING, PITTSBURGH, PA.

SHEET STEEL

for Strength Safety Beauty and Economy

When writing mention AMERICAN ARTISAN—Thank you!

Exhibition at Pennsylvania Hardware Show

Globe Stove and Range Company; parlor heaters. Representatives, W. S. Toomey and A. E. Murray.

American Steel and Wire Company; wire fence and steel posts. Representatives, T. N. Lippincott, H. S. Lockwood, L. E. Eaton, P. C. deMena, M. Harriman and M. Meiners.

Andes Range and Furnace Corporation; heaters, gas ranges. Representatives, H. G. Heisenbittel, J. W. Barker and L. P. Bowman.

Chicago Solder Company; solder, metal mender and radio rosin core. Representatives, John A. Davis and R. F. Ely.

Cincinnati Tool Company; clamps, chisels, punches, drills and wrenches. Representatives, J. A. Gardner and L. M. Nolan.

Co-operative Foundry Company; ranges, furnace and heat circulators. Representatives, Herbert V. Jennings, W. A. Lewis, C. A. Kinder, R. A. Kelly.

Fox Furnace Company; cabinet heaters. Representative, T. B. Valiant.

Lennox Furnace Company, Inc.; furnaces. Representatives, C. H. Schechter, John T. Lennon, B. C. Taylor, Frank F. Powderly and Dean Davis.

Monitor Furnace Company; furnaces. Representatives, George Kost, J. E. Bonham, R. J. Rickert and A. G. Rickert.

L. J. Mueller Furnace Company; furnaces, cabinet heaters, registers, fittings and air moisteners. Representatives, H. P. Mueller and C. L. Hewitt, Jr.

Peck, Stow and Wilcox Company; tools and builders hardware. Representatives, W. K. Hughes, John Dolan and George Arnold.

Quick Meal Stove Company; coal, gas and oil ranges. Representative, Charles S. Smith.

Tuttle and Bailey Manufacturing Company; registers, ventilators and radiator enclosures. Representatives, T. A. Warner and Earle Russell.

U. S. Register Company; regis-

ters, cold air faces and steel grills. Representatives, A. A. Stagg, B. J. White and Charles J. Pearson.

Harry G. Masten Returns to Sheet Metal Field With His Own Company

Harry G. Masten, who for many years has called on the sheet metal trade throughout Illinois, Indiana and Missouri for Merchant & Evans Company, has returned to the sheet metal field with his own business under the name of the Harry G. Masten Company, with offices in room 1304, 105 West Monroe street, Chicago.

Mr. Masten will be very glad to hear from his old friends in the field.



New England Hardware Dealers' Convention and Exhibition, Mechanics' Building, Boston, Massachusetts, February 22, 23 and 24, 1927. George A. Fiel, Secretary, 80 Federal Street, Boston.

Ohio Sheet Metal Contractors' Convention, Columbus, Ohio, February 23, 24 and 25, 1927. W. C. Abbott, New Southern Hotel, Columbus, Ohio, Secretary.

Michigan Sheet Metal and Roofing Contractors' Association, Pantlind Hotel, Grand Rapids, March 1, 2 and 3, 1927. Frank E. Ederle, Secretary, 1121 Franklin street, S. E., Grand Rapids.

Indiana Sheet Metal Contractors' Convention, Hotel Severin, Indianapolis, March 8, 9 and 10, 1927. L. W. Beach, Richmond, Indiana, secretary.

Indiana Fur-mets annual convention, Hotel Severin, Indianapolis, March 8, 9 and 10. Harry R. Jones, 308 Kenmore road, Indianapolis, Secretary.

Indiana Heating and Ventilating Association Convention, Hotel Severin, Indianapolis, March 8, 9 and 10, 1927. Frank E. Anderson, Terre Haute, Indiana, Secretary.

Sheet Metal Contractors' Association of Florida, St. Petersburg, Florida, March 28 and 29, 1927, at the Suwanee Hotel. Secretary, G. H. Leavitt, 111 Main Street, Tampa, Florida.

Sheet Metal Contractors' Association of Pennsylvania and the Distributors' and Salesmen's Auxiliary of Pennsylvania, Hotel Bethlehem, Bethlehem, Pennsylvania, April 5, 6 and 7, 1927. W. F. Angermeyer, 7253 Frankstown Avenue, Pittsburgh, Secretary. George A. Hesky, 314 Packer Avenue, Bethlehem, Chairman Convention Committee.

Illinois Sheet Metal Contractors' Association, Ottawa, Illinois, April 6 and 7, 1927. Fred J. Graeff, Secretary, 222 East Washington Street, Springfield, Illinois.

National Warm Air Heating and Ventilating Association, Hotel Cleve-

land, Cleveland, Ohio, April 13 and 14, 1927. Allen W. Williams, 168 East Long Street, Columbus, Ohio, Secretary.

Southeastern Retail Hardware and Implement Association, composed of Alabama, Florida, Georgia and Tennessee. Convention and Exhibition, Jacksonville, April 19, 20, 21, 1927. Walter Harlan, Secretary, 701 Grand Theater Building, Atlanta, Georgia.

Texas Sheet Metal Contractors' Association, Hotel Adolphus, Dallas, Texas, April 24 and 25. Harry Stanyer, Secretary-Treasurer, 2422 Alamo Street, Dallas.

National Association of Sheet Metal Contractors, Adolphus Hotel, Dallas, Texas, April 26, 27, 28 and 29, 1927. W. C. Markle, Secretary, 850 West North Avenue, Pittsburgh, Pennsylvania.

Arkansas Retail Hardware Association Convention, Little Rock, May, 1927. L. P. Biggs, Secretary, Little Rock.

Southern Hardware Jobbers' Association, Peabody Hotel, Memphis, Tennessee, May 10 to 13, 1927. John Donnan, Secretary, Richmond Virginia.

Old Guard Southern Hardware Salesmen's Association, Peabody Hotel, Memphis, Tennessee, May 11, 1927. R. P. Boyd, Secretary, R. F. D. No. 4, Box 19, Knoxville, Tennessee.

Mississippi Retail Hardware and Implement Association Convention and Exhibition, headquarters, White House, Biloxi, June 13, 14, 15, 1927. Buy Nason, Secretary, Columbus.

National Retail Hardware Association Congress, Mackinac Island, Michigan, June, 1927. H. P. Sheets, Secretary-Treasurer, 130 East Washington Street, Indianapolis, Indiana.

Missouri Sheet Metal Contractors' Association at Sedalia, Missouri, July 12 and 13, 1927. Ben Kolbenschlager, 3618 North Grand Street, St. Louis, Secretary.

Retail Hardware Doings

Illinois

Rupp and Pease have opened a hardware store at Mt. Pulaski.

Indiana

C. H. Heizerling Hardware Store, Garrett, was damaged by fire.

Iowa

The Meusel Hardware Store, Charles City, is being remodeled.

H. Grundmeyer of Wheatland has purchased the hardware store of Mr. Alfred Tohmman.

Michigan

Davis & Walls have sold their hardware business to Clyde Nelsey of Danisburg.

Minnesota

J. F. Harris Hardware Store, 2119 Broadway, Minneapolis, suffered a fire loss of \$5,000.00.

F. A. Cizek, Crosby, has purchased the hardware stock of Edward Krueger.

Missouri

Wm. H. Loutzenisser has purchased the hardware stock of Henderson Ogle at Mill Grove.

Oklahoma

The Creek County Hardware Company have opened a branch store at Kiefer.

OSBORN'S LEAD COTE

It has the flexible strength of steel.

It has the rust-resisting qualities of lead.

It lends itself to artistic development.

It is a durable and economical sheet metal.

It is uniformly soft and level—easy to work.

Its coating will not flake or peel.

Immediate shipment from stock—No. 18 to 28 gauges.

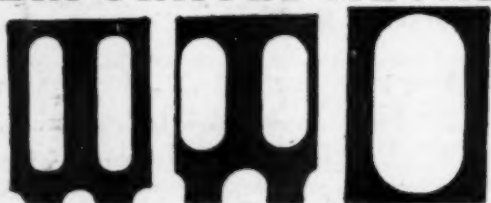
The J. M. & L. A. OSBORN CO.

"Everything used in Sheet Metal Work"

CLEVELAND

Buffalo Warehouse 64-68 Rapin Street

PERFORATED METALS



All Sizes and Shapes of Holes
In Steel, Zinc, Brass, Copper, Tinplate, etc.
For All Screening, Ventilating and Draining
EVERYTHING IN PERFORATING METAL

THE HARRINGTON & KING PERFORATING CO.

5649 FILLMORE ST.—CHICAGO, ILL. U. S. A.
NEW YORK OFFICE 114 LIBERTY ST.

Memorial Monuments

Write for Prices and
Illustrations

Gerock Bros. Mfg. Co.

Sheet Metal Ornaments
and
STATUARY

1252 So. Vandeventer Ave.

St. Louis, Mo., U. S. A.



Round
Corrugated

Plain Round



NEVER MADE WITHOUT THIS

TRADE *F. Dieckmann* MARK

Quality and Service Made 'em Famous

Made of one piece of heavy gauge material, in all styles and angles from 10 to 90 degrees, of 24, 26, 28 ga. tines, then galvanized after formation.

DIECKMANN
Elbows and Shoes
*are the standard of the market
and always give satisfaction*

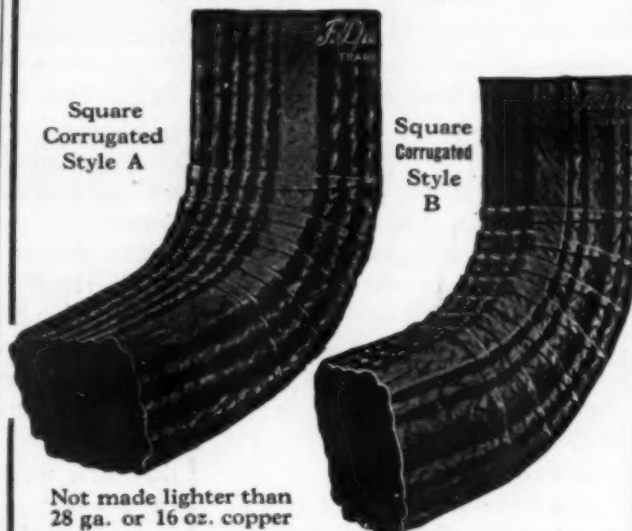
Send for new catalogue 26 showing complete line

The Ferdinand Dieckmann Co.

P. O. Station B, Cincinnati, O.

Square
Corrugated
Style A

Square
Corrugated
Style B



Not made lighter than
28 ga. or 16 oz. copper

Heavier Sales and Production Characterize Steel Industry—Market Looks Encouraging

Pig Iron Market is Firm—Buying More Active in Nonferrous Metals

ENCOURAGING factors are ascendant in the iron and steel markets in point both of new business and production. Orders for heavy finished steel in the key districts are in excess of the January rate and compare favorably with last February. Quiet selling of pig iron for second quarter delivery has piled up a surprising tonnage. Consumers of coke, especially in the East, are purchasing more liberally in anticipation of a coal strike, and a firmer Connellsville market is one consequence.

Chicago mills must go back almost a year to ferret out as good a week in steel bar specifications. Deliveries of tubular goods have become sufficiently deferred to cause buyers to look more carefully to their requirements. Some sheet-makers have acquired a semblance of a backlog.

Warehouses in all centers are meeting increasing demand. Tin plate consumers are pressing for shipments. Operations in practically all districts are expanding, with the trend most marked at Chicago where a Steel corporation subsidiary has lighted its third blast furnace stack in as many weeks. Two stacks have been added at Cleveland.

Steel corporation subsidiaries are operating this week at 87 per cent of ingot capacity.

Pig Iron

At Pittsburgh pig iron users are strangely quiet concerning normal future requirements, or for storage. Producers believe that the recent minimums of \$17.50 and \$18.50 on basic and bessemer, respectively, now are matters of the past. Additional sales of bessemer iron in lots of 100, 500 tons and 1,000 tons are noted at \$19, valley.

Practically every maker now is quoting \$18, valley, or that equiva-

lent as minimum. Foundry iron and malleable still are selling in small lots at \$18.50, valley. Occasionally shoppers for larger tonnage obtain \$18, valley.

Valley producers or low phosphorus iron are selling numerous small tonnages at \$28, valley, and also are quoting that figure for the second quarter.

While 1,800 to 2,000 tons of foundry iron was sold at Chicago in the last few days at \$20.50 the market has slipped 50 cents, now ranging from \$20 to \$20.50.

A melter northwest of Chicago placed 900 to 1,000 tons of No. 2 foundry at \$20 for March shipment. Several other lots of 250 to 500 tons were booked at the same price, in one instance the silicon differential having been waived. An inquiry from a melter in central Michigan for 1,000 tons of malleable is active.

Though there has been little lag in demand for pig iron, the Birmingham market is strong. The first quarter output has been covered, and a larger portion of the probable make during the second quarter has been sold.

Production is somewhat greater, 11 furnaces now making foundry iron, 11 basic and one special iron.

Quotations are firm at \$18, base, Birmingham, with \$1 additional asked on orders under 150 to 200 tons, and where early delivery is wanted.

Copper

The rise in copper prices has been as rapid as the drop. At 12.50 cents buying began, and as quickly as the market looked strong further buying was stimulated.

A large tonnage was booked on the way up to 12.75 cents and since that level was reached the buying has not been so large, but has been active, mostly for March-April.

Midwestern delivery was between $\frac{1}{8}$ and $\frac{1}{4}$ cent over the Connecticut price.

Stocks of refined copper increased over 8,000 tons last month to 93,982 tons. Shipments were large at 124,629 tons, of which 76,499 tons were for domestic users, or slightly more than the 1926 monthly average. Output set a new record at 133,110 tons of refined.

Zinc

Not much business has been done, but the zinc market has been stronger lately. Domestic shipments last month were 45,884 tons, lighter than the average, and stocks increased over 8,000 tons. Exports were light also. Joplin mining has been curtailed and the ore market is stronger.

Lead

Premium prices on lead are being paid in a few instances because smelters are limiting sales as they are well booked at the moment and reluctant to sell far ahead at the present low level of prices.

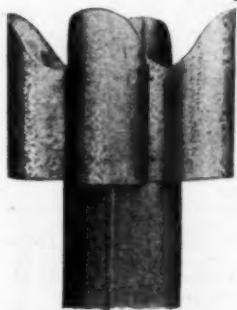
There has been fair curtailment of Mexican output, affecting mostly supplies to Europe. Buying has been large.

Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, \$43.00; commercial 45-55, \$40.00; and plumbers', \$37.00, all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, \$17.00 to \$17.50; old iron axles, \$22.00 to \$22.50; steel springs, \$16.50 to \$17.00; No. 1 wrought iron, \$12.25 to \$12.75; No. 1 cast, \$15.50 to \$16.00, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc, $4\frac{1}{2}$ cents, and cast aluminum, 15 cents.



FOUR LEAF CLOVER CHIMNEY TOP

Prevents down draft
without a tall stack.
No moving parts to
stick, wear out or
blow off.

Manufactured by

G. O. SAPP, Tallula, Ill.

Pat'd. Sept. 5, 1924

DEALERS WANTED

EVERYTHING FOR THE TINSMITH

WE are manufacturers as well as merchants and we at all times have on hand a large complete stock of everything that you may be in need of. Try us on your next order.

This is our motto:
"EVERYTHING MUST BE RIGHT"

Write today for our latest catalog

BERGER BROS. CO.

WAREHOUSES AND FACTORY: 100 TO 114 BREAD STREET
229 TO 237 ARCH STREET, PHILADELPHIA, PA.
Manufacturers of "Quaker City" line of Miters,

ÆOLUS FOR HOMES

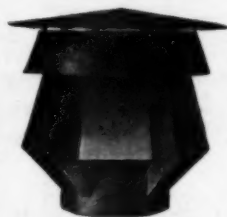
The home should be properly ventilated—few of them are. Here is a sales opportunity often overlooked by the average Sheet Metal Worker, but one which offers a lucrative business to those who take advantage of it.

Æolus-Dickinson Co.

Vent Makers Since 1888

3333-53 South Artesian Avenue
CHICAGO

Phone: Lafayette 1862-1863



The 12-Cylinder Ventilator
Used in Every State
in the Union.

SPECIFY ÆOLUS
VENTILATORS



Ingot Iron

**Resists Rust
Works Easier
Reduces Labor Costs
Satisfies Customers**

THE AMERICAN ROLLING MILL COMPANY
Middletown, Ohio

Export: The ARMCO International Corp.
Cable Address: ARMCO, Middletown

CHICAGO STEEL SLITTING SHEAR

**LIGHT—POWERFUL
DURABLE**



Capacity 10 gauge sheets
Any Length or Width
Flat Bars 3/16x2"
Weight 22 pounds

Price \$12.50 Net
F. O. B. Chicago

Made of pressed steel and equipped with hold-down. Blades of highest grade crucible steel. Most indispensable high grade shears made. Equal to other shears selling at over twice the price. **ORDER YOURS TODAY.**

DREIS & KRUMP MFG. CO., 7404 Loomis St., Chicago

**We make Hand-Dipped
Galvanized Shingles.**

Also Shingles from sheets already galvanized.

Our Hand-Dipped Shingles are stamped from prime tin plate, and immersed, one at a time, in molten zinc.

We also make painted shingles—red and green.

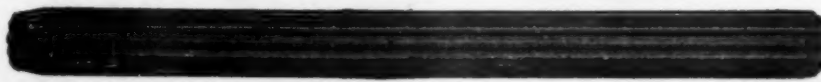
CORTRIGHT METAL ROOFING CO.
50 N. 23rd Street, Philadelphia
528 S. Clark Street, Chicago



CORTRIGHT METAL SHINGLES

Plecker's Galvanized Eave Trough and Corrugated Expanding Conductors

Made of
Keystone
Copper Bearing
Steel



Costs no more
Lasts longer
Therefore
Cheaper

CLARK-SMITH HARDWARE CO.

PEORIA, ILLINOIS



"The Power Fan's
AREX—Only Rival."
Original Siphonage Ventilator
200,000 perfect installations!

The Arex-Austor holds all records for efficiency and performance—conceded as the only scientific substitute for fans, blowers and other apparatus.

Engineering Service Free
Prompt Shipment from Stock
Exclusive Ventilator Mfrs.

AREX COMPANY

1881 Conway Bldg., Chicago

ECONOMY VENTILATOR

Designed to meet the demand for a ventilator at lowest possible cost, yet capable of solving any ordinary ventilating problem. **IT PAYS TO STOCK THEM!**

Write for quantity discount.



Inexpensive!

When writing mention AMERICAN ARTISAN—Thank you!

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN AND HARDWARE RECORD is the only publication containing Western Hardware and Metal prices corrected weekly.

METALS

FIG IRON

Chicago Fdy., No. 2.....	\$20 50
Southern Fdy., No. 2.....	24 01
Lake Superior Charcoal.....	27 04
Malleable.....	20 50

FIRST QUALITY BRIGHT

TIN PLATES

IC 20x28 112 sheets.....	\$25 10
IX 20x28.....	29 60
IXX 20x28 56 sheets.....	16 20
IXXX 20x28.....	17 55
IXXXX 20x28.....	18 95

TERNE PLATES

IC 20x28, 40-lb. 112 sheets.....	Per Box \$26 00
IX 20x28, 40-lb. 112 sheets.....	28 50
IX 20x28, 25-lb. 112 sheets.....	21 75
IX 20x28, 25-lb. 112 sheets.....	24 25
IC 20x28, 20-lb. 112 sheets.....	20 00
IV 20x28, 20-lb. 112 sheets.....	22 50
IC 20x28, 15-lb. 112 sheets.....	18 50

"ARMCO" INGOT IRON PLATES
No. 8 ga. up to and including
¼ in.—100 lbs.\$4 55

COKE PLATES

Cokes, 80 lbs., base, 20x28.....	\$13 60
Cokes, 90 lbs., base, 20x28.....	13 80
Cokes, 100 lbs., base, 20x28.....	14 00
Cokes, 107 lbs., base, 1c.....	14 30
Cokes, 135 lbs., base, 1c.....	16 40
Cokes, 155 lbs., base, 56 sheets.....	9 20
Cokes, 175 lbs., base, 56 sheets.....	10 05
Cokes, 195 lbs., base, 56 sheets.....	10 90

BLUE ANNEALED SHEETS

Base 10 ga.....per 100 lbs.	\$2 50
"Armco" 10 ga.....per 100 lbs.	4 00

ONE PASS COLD ROLLED

BLACK

No. 18-20.....per 100 lbs.	\$3 75
No. 22.....per 100 lbs.	3 90
No. 24.....per 100 lbs.	3 95
No. 26.....per 100 lbs.	4 05
No. 27.....per 100 lbs.	4 10
No. 28.....per 100 lbs.	4 20
No. 29.....per 100 lbs.	4 35
No. 30.....per 100 lbs.	4 45

"ARMCO" GALVANIZED

"Armco" 24.....per 100 lbs.	\$6 25
-----------------------------	--------

GALVANIZED

No. 16.....per 100 lbs.	\$4 30
No. 18.....per 100 lbs.	4 45
No. 20.....per 100 lbs.	4 60
No. 22.....per 100 lbs.	4 65
No. 24.....per 100 lbs.	4 80
No. 26.....per 100 lbs.	5 05
No. 27.....per 100 lbs.	5 15
No. 28.....per 100 lbs.	5 20
No. 30.....per 100 lbs.	5 70

BAR SOLDER

Warranted 50-50.....per 100 lbs.	\$43 00
Commercial 45-55.....per 100 lbs.	40 00
Plumbers.....per 100 lbs.	37 00

ZINC

In Slabs.....	\$8 50
---------------	--------

SHEET ZINC

Cash Lots (600 lbs.).....	\$13 00
Sheet Lots.....	14 00

BRASS

Sheets, Chicago base.....	17½c
Mill Base.....	17½c
Tubing, brazed base.....	26½c
Wire, base.....	18½c
Rods, base.....	16½c

COPPER

Sheets, Chicago base.....	21½c
Mill Base.....	20½c
Tubing, seamless base.....	24½c
Wire, No. 9, B & S Ga.....	18½c
Wire, No. 10, B & S Ga.....	18½c
Wire, No. 11, B & S Ga.....	19c
Wire, No. 8, B & S Ga. and heavier.....	17½c

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

LEAD.

American Pig.....	\$8 35
Bar.....	9 35

Sheet

Full Coils.....per 100 lbs.	14 00
Cut Coils.....per 100 lbs.	14 25

TIN

Pig tin.....per 100 lbs.	\$76 00
Bar tin.....per 100 lbs.	77 00

ASBESTOS

Paper up to 1/16.....	6c per lb.
Roll board.....	6½c per lb.
Mill board 2/32 to ¾.....	6c per lb.
Corrugated Paper (250 sq. ft. to roll).....	\$6.00 per roll

BRUSHES

Hot Air Pipe Cleaning Bristle, with handle, each	\$0 85
--------------------------------------------------	--------

Flue Cleaning

Steel only, each.....	1 25
-----------------------	------

BURRS

Copper Burrs only.....	40-2½%
------------------------	--------

CEMENT, FURNACE

American Seal, 5-lb. cans, net	\$ 40
American Seal, 10-lb. cans, net	50
American Seal, 25-lb. cans, net	2 00
Pecora.....per 100 lbs.	7 51

CHIMNEY TOPS

Iwan's Complete Rev. & Vent.....	30%
Iwan's Iron Mountain only.....	35%
Standard.....	30 to 40%

CLINKER TONGS

Front Rank, each.....	\$0 75
Per doz.....	8 40

CLIPS

Damper Acme, with all tail pieces, per doz.....	\$1 25
Non Rivet tail pieces, per doz.....	25

COPPERS—Soldering

Pointed Roofing

3 lb. and heavier.....per lb.	40c
2½ lb.per lb.	45c
2 lb.per lb.	45c
1½ lb.per lb.	55c
1 lb.per lb.	60c

CORNICE BRAKES

Chicago Steel Bending Nos. 1 to 6B.....	Net
-----------------------------------------	-----

CUT-OFFS

Gal. plain, round or cor. rd. standard gauge.....	40%
26 gauge.....	30%

DAMPERS

"Yankee" Hot Air 7 inch, each 20c, doz.....	\$1 75
8 inch, each 25c, doz.....	2 40
9 inch, each 30c, doz.....	2 75
10 inch, each 32c, doz.....	3 00

Smoke Pipe

7 inch, each.....	\$0 35
8 inch, each.....	40
9 inch, each.....	50
10 inch, each.....	60
12 inch, each.....	90

Reversible Check

8 inch, each.....	\$1 50
9 inch, each.....	1 70

DIGGERS

Post Hole Iwan's Split Handle (Eureka) 4-ft. Handle.....per doz.	\$14 00
7-ft. Handle.....per doz.	36 00
Iwan's Hercules pattern, per doz.....	14 90

EAVES TROUGH

Galv. Crimpedge, crated 75 & 5% Zinc, "Barnes".....	60%
-----------------------------------------------------	-----

ELBOWS

Conductor Pipe Galv., plain or corrugated, round flat Crimp.....	60%
28 Gauge.....	45%
26 Gauge.....	45%
24 Gauge.....	15%

Galv. & Terne Steel

Plain Rd. and Rd. Corr.: 28 Ga.	60%
26 Ga.	45%
24 Ga.	15%

Square Corrugated

No. 28 Gauge.....	50%
26 Gauge.....	35%

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated, Not nested.....	70 & 5%
Nested solid.....	70 & 5%

Sq. Corr., A. & B. & Octagon:

28 Ga.	50%
26 Ga.	35%

Portico

1", 1½", 1¾".....	45%
-------------------	-----

Copper

16 oz., all designs.....	45%
--------------------------	-----

Zinc—

All styles.....	60%
-----------------	-----

ELBOWS—Steam Pipe

1-piece Corrugated, Uniform Blue "Milcor" No. 28 Gauge, Doz.....	\$1 25
5-inch.....	1 35
6-inch.....	1 35
7-inch.....	1 75

Special Corrugated

6-inch.....	\$1 00
7-inch.....	1 60

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge, Uniform Blue, 5-inch.....	\$1 75
6-inch.....	1 85
7-inch.....	2 15

WOOD FACES—50% off list.

726-6-12½% (100 rods).....	\$28 68
1948-614½% (100 rods).....	43 62

FILES AND RASPS

Heller's (American).....	50-10%
American.....	60-10%
Arcade.....	50%
Black Diamond.....	40-10-5%
Eagle.....	50%
Great Western.....	50%
Kearney & Foot.....	50%
McClellan.....	50%
Nicholson.....	50%
Simonds.....	60%

FIRE POTS

Chytan & Lambert's East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Arizillo, San Angelo and Laredo, Texas.....	52%
West of above boundary.....	48%

Geo. W. Diener Mfg. Co. Ea.

No. 02 Gasolene Torch, 1 qt.	\$ 5 55
No. 0250, Kerosene, or Gasolene Torch, 1 qt.	7 50
No. 10 Tinner's Furn. Square tank, 1 gal.....	12 60
No. 15 Tinner's Furn. Round tank, 1 gal.....	12 00
No. 21 Gas Soldering Furnace.....	3 60
No. 110 Automatic Gas Soldering Furnace.....	10 50

Double Blast Mfg. Co.

Gasolene, Nos. 25 and 36.....	60%
-------------------------------	-----

Quick Meal Stove Co.

Vesuvius, F. O. B. St. Louis 30% (Extra Dist. for large quantities)	30%
---------------------------------------------------------------------	-----

GALVANIZED WARE

Pails (Galv. after made), 10-qt.	\$2 12
Tubs (Galv. after made), No. 1.....	6 00
No. 2.....	6 85

GLASS

Single Strength, A, 25-in. brackets.....	86%
Single Strength, A, 34 to 40-in. bracket.....	85%
Single Strength, A, all other brackets.....	85%
Double Strength, A, all sizes.....	86%

HANGERS

Conductor Pipe Milcor Perfection Wire.....	25%
--------------------------------------------	-----

Eaves Trough

Milcor Eclipse Wire.....	15%
Milcor Triplex Wire.....	10%
Milcor Milwaukee Extension 10% Milcor Steel (galv. after forming) List.....	plus 12½%
Milcor Seldock E. T. Wire, List.....	plus 50%

HOOKS

Box V. & B. No. 1, each.....	\$0 26
------------------------------	--------

Conductor

"Direct Drive" Wrought Iron for wood or brick.....	15%
Hay V. & B. No. 1, each.....	\$0 26

HUMIDIFIERS

"Front-Rank," Automatic In single lots.....	50%
In lots of 10 or more.....	50-5%
In lots of 25 or more.....	50-10%
Vapor pans, etc., each.....	50%

LIFTERS

Stave Cover Coppered.....per gro.	\$6 00
Alaska.....per gro.	4 75

MALLETS

Tinners Hickory.....per doz.	\$2 25
------------------------------	--------

MITRES

Galvanized steel mitres, 28 Ga.	70
26 Ga.	60-20

NAILS

Cut Steel.....	\$4 25
Cut Iron.....	4 35
Wire Common.....	3 05
Cement Coated.....	3 05

(Continued on page 148)

VESUVIUS BLOW TORCHES

In pint or quart sizes

With quickly removable soldering iron hooks.



For Gasoline

Vesuvius Blow Torches are made of brass or non-corrosive oxydized terne plate. The latter is particularly recommended for hard usage.

Write for prices and illustrated circular today

QUICK MEAL STOVE COMPANY

Div. American Stove Company

825 Chouteau Ave.

St. Louis, Mo.



Torril

Genuine Tinners Fire Pots

bearing the trade name "Torril" are made by Diener. None others are genuine. Be sure the Furnace you buy has our name on the tank.

GEO. W. DIENER MFG. CO., CHICAGO

Makers of fine Blow Torches and Fire Pots.



**This Is the Fire Pot You Need
WHY?**

B It always burns with a blue flame which produces **THE HEAT**.
E A 2½ pound copper will heat and melt solder in **TWO MINUTES**.
C The pot will generate and operate outdoors in **ANY KIND OF WEATHER**.
A It will heat irons as fast as they are cooled. No time wasted.
U Less than a gallon of gasoline is used in a day.
S It is smokeless and odorless while in operation.
E It can be turned down low when not in use.

Order yours now. Only \$11.99 f. o. b. factory. Two per cent discount when cash accompanies the order.

DOUBLE BLAST MFG. CO., Inc.
Commerce Ave. North Chicago, Ill.

No. 35 Double Blast Gasoline Fire Pot

50-INCH FORMING ROLL

This Forming Roll is built in all standard sizes, with our Patented Opening Device by means of which it is opened and closed in a few seconds.

We build a complete line of Shears and Punches, all sizes, or hand or belt power.

Write for Catalog "R"
BERTSON & CO., Cambridge City, Ind.



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PAGES**

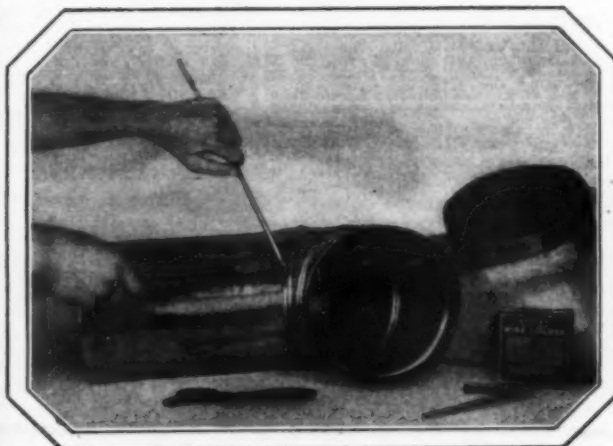
KESTER SOLDER

Self-Fluxing



(Underwriters' Laboratories Inspected)

"Requires Only Heat"



On New Work

ON NEW WORK where time saved on the job means a better profit, the wise tinner uses Kester Solder. Soldering time is a big item in the sheet-metal world and a saving of one-third on this item should be welcomed by everyone.

Common solder needs three operations (solder—flux—heat). Kester only two, because it "requires only heat." Kester supplies its own scientific flux from tiny pockets inside itself as it is used.

That's why you save one-third of your soldering time with Kester. Increase your net profit by using Kester Solder from now on.



Kester Acid-Core Solder for general use in 1 lb. cartons; 1, 5 and 10 lb. spools. Small package Acid-Core Solder, Kester Metal Mender for autoist, householder, etc. For delicate radio and electrical work—Kester Rosin-Core Solder.

Manufactured by the
CHICAGO SOLDER COMPANY
4241 Wrightwood Ave.
CHICAGO, U. S. A.

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NETTING, POULTRY

Galvanized before weaving	57 1/4-5%
Galvanized after weaving.	52 1/4-5%

PASTE

Asbestos Dry Paste:	
200-lb. barrel	\$16 00
100-lb. barrel	8 75
35-lb. pail	3 50
10-lb. bag	1 10
5-lb. bag	60
2 1/2-lb. cartons	35

PIPE

Conductor	Cor. Rd., Plain Rd. or Sq.
-----------	----------------------------

Galvanized

Crated and nested (all gauges)	75-2 1/2%
Crated and not nested (all gauges)	70-15%

Furnace Pipe

Double Wall Pipe and Fittings	50%
Single Wall Pipe, Round	
Galvanized	50%
Galvanized and Tin Fittings	50%

Lead

Per 100 lbs.	\$12 50
-------------------	---------

Stove Pipe

"Milcor" "Titelock" Uniform Blue Stove	
28 gauge, 5 inch U. C. nested	11 50
28 gauge, 6 inch U. C. nested	13 25
28 gauge, 7 inch U. C. nested	14 25
30 gauge, 5 inch U. C. nested	10 50
30 gauge, 6 inch U. C. nested	11 25
30 gauge, 7 inch U. C. nested	13 25

T-Joint Made up

6-inch, 28 ga.	Per Doz. \$ 5 00
---------------------	------------------

All Zinc

No. 11, all styles.	60%
--------------------------	-----

POKERS, STOVE

Wrt Steel, str't or bent.	per doz. \$0 75
Nickel Plated, coil handles.	per doz. 1 10

POKERS, FURNACE

Each	\$0 50
------------	--------

FULLEYS

Furnace Tackle.	per doz. \$0 60
..... per gro.	6 00
Furnace Screw (enameled)	per doz. 75

Ventilating Register

Per gross	9 00
Small, per pair	30
Large, per pair	50

PUTTY

Commercial Putty, 100-lb. Kits	\$3 40
--------------------------------------	--------

QUADRANTS

Malleable Iron Damper.	10%
-----------------------------	-----

REDUCERS—Oval Stove Pipe

Per Doz.	\$2 25
7-6, 1 doz. in carton.	—

BASEBOARD REGISTERS

.....	50%
-------	-----

FLOOR REGISTERS AND BORDERS

Cast Iron	30%
Steel and Semi-Steel.	40%
Baseboard	40%
Adjustable Ceiling Ventilators	40%

Register Faces—Cast and Steel

Japaned, Bronzed and Plated, 4x6 to 14x14	40%
Large Register Faces—Cast, 14x14 to 38x42	60%
Large Register Faces—Steel, 14x14 to 38x42	65%

RIDGE ROLL

Galv., Plain Ridge Roll, b'd'd	75-10-5%
Galv., Plain Ridge Roll, crated	75-10%
Globe Finials for Ridge Roll	50%

ROOFING

Per Square

Best grade, slate surf. prep'd	\$2 30
Best talc surfaced.	2 65
Medium talc surfaced.	2 00
Light talc surfaced.	1 20
Red Rosin Sheeting, per ton	57 00

SCREWS

Sheet Metal	
7, 1/2x1/2, per gross.	\$0 52
No. 10, 3/4x3/16, per gross	68
No. 14, 1/2x1/2, per gross.	89

SHEARS, TINNERS' & MACHINISTS'

Viking	\$22 00
--------------	---------

Lennox Throatless

No. 18	35%
Shear blades	10%
(f. o. b. Marshalltown, Iowa.)	—

SHIELDS, REGISTER

No. 1 "Gem," floor	\$12 00 doz.
No. 2 "Gem" wall	6 00 doz.

SHOES

Galv. 28 Gauge, Plain or corg. round flat crimp.	60%
26 gauge round flat crimp.	45%
24 gauge round flat crimp.	15%

SNIPS, TINNERS'

Clover Leaf	40 & 10%
National	40 & 10%
Star	50%
Milcor	Net

SQUARES

Steel and Iron	Net
----------------------	-----

(Add for bluing, \$3 per doz. net)

Mitre	Net
-------------	-----

Try	Net
-----------	-----

Try and Bevel	Net
---------------------	-----

Try and Mitre	Net
---------------------	-----

Fox's	per doz. \$6 00
Winterbottom's	10%

STOPPERS, FLUE

Common	per doz. \$1 10
Gem, No. 1.	per doz. 1 10
Gem, flat, No. 3.	per doz. 1 00

VENTILATORS

Standard	30 to 40%
----------------	-----------

WIRE

Plain annealed wire, No. 8, per 100 lbs.	\$3 05
Galvanized barb wire, per 100 lbs.	3 90
Wire cloth—Black painted, 12-mesh, per 100 sq. ft.	1 65
Cattle Wire—galvanized catch weight spool, per 100 lbs.	3 75
Galvanized Hog Wire, 80 rod spool, per spool	3 25
Galvanized plain wire, No. 9, per 100 lbs.	3 50
Stove Pipe, per stone.	1 10

WRINGERS

No. 790, Guarantee	each \$ 5 10
No. 770, Bicycle	each 4 70
No. 670, Domestic	each 4 35
No. 110, Brighton	each 3 70
No. 750, Guarantee	each 5 10
No. 740, Bicycle	each 4 70
No. 22, Pioneer	each 3 40
No. 2, Superb	each 2 65

The NEW IMPROVED "STANDARD"**Rotable Ventilator**

Patents pending

This favorite cone-shaped ventilator is now improved in several important points.

The weight of the ventilator body is now carried on a concave thrust bearing nested in the apex of the conical body. This bearing turns upon the pivot point of the stationary center spindle.

The bronze Guide Bushings are now made of non-corrosive bronze which minimizes friction and any tendency to screech when body is rotating.

There are other new features. Write today for new catalog and price list.

STANDARD VENTILATOR CO., LEWISBURG, PA.

MARSHALLTOWN**Throatless Shears**

HERE is a machine that will do all your sheet cutting. It takes sheets of any size and does accurate work quickly. It is our No. 18 Hand Power Shear, the size for the average shop. It is high grade throughout, being made of the strongest and toughest metals.

It sells at a price which makes it possible for you to own one NOW.

Covered By Patent No. 1020508

Address Dept. A. A. and ask for our catalog and price list covering our entire line.

MARSHALLTOWN MFG. CO., Marshalltown, Iowa

WIRE

electrical, rope, barbed, plain, nails (bright

and coated), tacks, spikes, bale ties, hoops, springs, netting, wire fences, steel posts, steel gates, trolley wire, rail bonds, flat wire, cold rolled strip steel, piano wire, round and odd-shape wire, screw stock, concrete reinforcement. Aerial tramways.

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COPPER
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METAL CEILINGS

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ILLINOIS

CHICAGO STEEL CORNICE BRAKES

STANDARD OF THE WORLD



THE BEST BRAKE FOR ALL PURPOSES:
Most Durable, Easiest Operated, Low in Price;
Made in All Lengths and to Bend All Gauges
of Metal. Over 23,000 in use.

WRITE FOR PARTICULARS

DREIS & KRUMP MFG. CO., 7404 Loomis Street, CHICAGO

OUR NEW IMPERIAL PUNCH NO. 8

Large throat clearance. Capacity $\frac{3}{4}$ " hole thru $\frac{3}{4}$ " iron. Operating handles will not become disengaged. Roller Bearing. No cams to wear out. Just right for standing seams or sky-light work. We furnish base for bench purposes. Write for Prices

Whitney Metal Tool Company

Ball Bearing Punches
Rockford, Illinois, U. S. A.

93 Forbes
Street

93 Forbes
Street

1



Send for catalog today

VIKING SHEAR

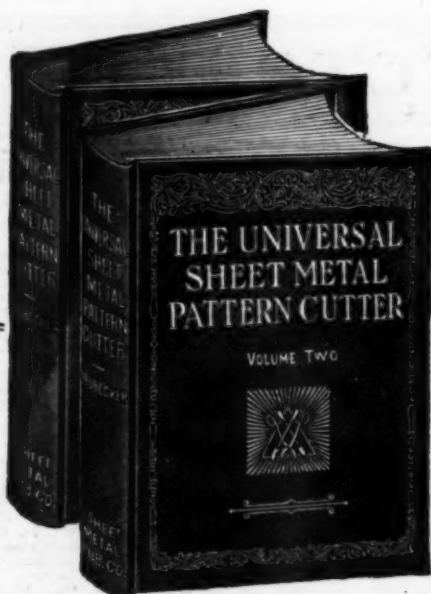
Compound LEVER Handle—Removable Blades

A child can work them

VIKING SHEAR CO., Erie, Pa.

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- Asbestos Paper.**
Sall Mountain Co., Chicago, Ill.
- Asbestos Products.**
Sall Mountain Co., Chicago, Ill.
- Bale Ties.**
American Steel & Wire Co., Chicago, Ill.
- Blowers.**
Sturtevant Co., B. F., Boston, Mass.
- Bolts—Stove.**
The Kirk-Latty Co., Cleveland, Ohio
- Lamson & Sessions Co.,**
Cleveland, Ohio
- Brakes—Bending.**
Dreis & Krump Mfg. Co., Chicago, Ill.
- Brakes—Cornice.**
Dreis & Krump Mfg. Co., Chicago, Ill.
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- Cans—Garbage.**
Osborn Co., The J. M. & L. A., Cleveland, Ohio
- Castings—Malleable.**
Fanner Mfg. Co., Cleveland, Ohio
- Ceilings—Metal.**
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- Milwaukee Corrugating Co.,**
Milwaukee, Wis.
- Wheeling Corrugating Co.,**
Wheeling, W. Va.
- Chaplets.**
Fanner Mfg. Co., Cleveland, Ohio
- Chains—Sash.**
Parker-Kalon Corp., New York, N. Y.
- Chimney Tops.**
G. O. Sapp, Tallula, Ill.
- Standard Ventilator Co.,**
Lewisburg, Pa.
- Cleaners—Furnace.**
Sturtevant Co., B. F., Boston, Mass.
- Cleaners—Suction.**
Sturtevant Co., B. F., Boston, Mass.
- Choker Tongs.**
L. J. Mueller Furnace Co., Milwaukee, Wis.
- Coal Chutes.**
Majestic Co., The, Huntington, Ind.
- Copper.**
Copper & Brass Research Association, New York
- Cornices.**
Friedley-Voshardt Co., Chicago, Ill.
- Milwaukee Corrugating Co.,**
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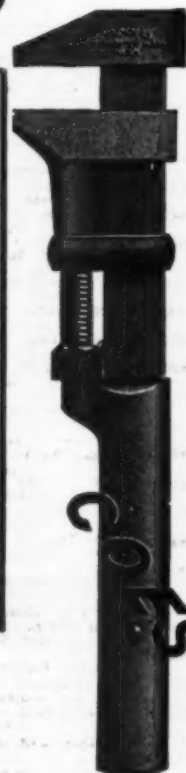
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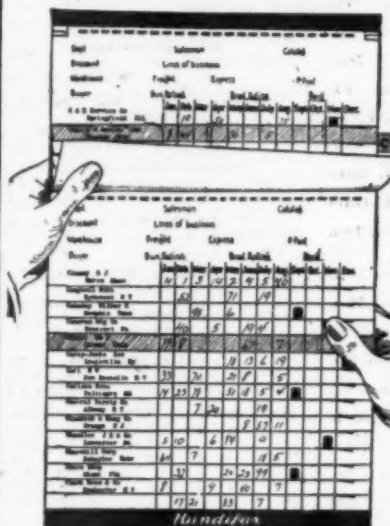


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For Sale—Or Exchange in Chicago. Well established good paying General sheet metal, furnace and roofing shop in excellent location with stock and full equipment. A fine opportunity for two live hustlers. 23 years in this location. Will sell at a reasonable price. Poor health forces owner to sell. Address—C-52, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 8-3t.

For Sale—A first class up-to-date light Manufacturing sheet metal and furnace business fully equipped. No competition and large territory. Established 22 years. Steady going the year around. Located in the richest farming community in Northern Illinois. This will bear close inspection. Address—C-50, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 8-3t.

Wanted—To buy sheet metal shop and roofing business in some live town 8 to 20 thousand population. Prefer Georgia or Alabama. I will also go in partnership with some reliable man. I have a complete set of tools. Address—W. H. Sapp, 530 18th Street, Bessemer, Ala. 8-3t.

For Sale—4 new Renfrew cream separators, 3 still in crates and one has been on floor for display. What have you to offer for cash or trade? Address—Holmes Hardware Co., Woodhull, Illinois. 8-3t.

Hardware Store Wanted—Wanted to hear from owner of hardware business for sale, cash price and particulars. **D. F. Bush, Minneapolis, Minnesota.** 8-3t.

For Sale—New No. 52 two-burner Propane gas stove, two drums gas with full equipment, \$27.00. Address **R. F. Wahl, Morrisonville, Illinois.** 6-3t.

HELP WANTED

Wanted—Stove and Refrigerator salesman for Chicago and suburban trade. Trade mark line. Also salesman wanted for state of Wisconsin. Address—C-51, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 8-3t.

HELP WANTED

Wanted—Good all around tinner and furnace man for southeastern Wisconsin town of 4,500. Inside and outside work, and when not busy in shop can help in store. Married man, about 40 years of age. Steady job (winter and summer). Can start about March 15. State wages, etc., in first letter. Best of schools and churches. Address C-55, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 8-3t.

Wanted—First class plumber and warm air furnace man to work in a good plumbing and tin shop in a town of 1800 population in western Iowa. We want a man who can do both plumbing and tinning, especially plumbing. Good wages and steady work for an experienced man. Write at once to **I. Wilson & Co., Dunlap, Iowa.** 7-3t.

Wanted—A practical furnace salesman to sell high class warm air heating apparatus. One capable of taking complete charge of sales for furnace department. A drawing account to be charged against liberal commission and a share of the net profits of the furnace department. **Interstate Cornice Works, Sioux City, Iowa.** 7-3t.

Wanted—A country town hardware store and shop 50 miles from Chicago on the Dixie Highway wants an experienced tinner, furnace man and plumber. Must be able to repair pumps on farms. Salary and percentage. Steady work. Last employee worked 7 years. Address C-47, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t.

Wanted—Experienced man to manage our factory. Sheet metal and machine shop experience necessary. Write stating experience, also salary expected. Address—C-42, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 6-3t.

Plumber wants first class sheet metal and furnace man to buy half interest in tinning, furnace and plumbing shop in small town in southeastern Iowa. Not much money required. Address C-54, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Ill. 5-3t.

SITUATION WANTED

Situation Wanted—Experienced sheet metal worker who has been in charge of sheet metal shop for eight years and who has been with canning factory for last 30 years wants a position with sheet metal shop. Factory shut down because of slack business. For last 23 years was superintendent of can making department. Age 56. Must work to keep contented. Wages or salary no object. Address C-37, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 5-3t.

Situation Wanted—Would like a position with some manufacturing company, who makes poultry equipment or some sheet metal specialty, as superintendent, foreman or in experimental department. Nearly 20 years' experience with sheet metal and understand chickens. At present have a good design for a round brooder house. Address **E. Haverstock, 3525 South Main street, South Bend, Indiana.** 7-3t.

Situation Wanted—Shop man, partnership preferred; age 54. Efficient detailer and draftsman, experienced on hand and power equipment to produce any light and heavy sheet metal work coming to general jobbing shop of larger city, including heating and ventilating blower systems. Code installations. A number of years in full charge. Address C-46, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t.

Situation Wanted—By married man, no floater, steady position only. Can do tinning, plumbing, heating of all kinds; can draft own patterns, lay out and sell heating systems. Prefer southern Michigan. Have had 20 years' experience. Am now employed, so will have to have a couple weeks to give notice to present employer. Address—C-54, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 8-3t.

SITUATION WANTED

Situation Wanted—By sheet metal worker and furnace man with 15 years' experience on all class of work. Can layout and install furnaces and do heating engineering as well as cut most patterns. Experienced on factory maintenance and in sheet metal department of furnace factory. Address—C-41, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 6-3t.

Situation Wanted—By a first class all around sheet metal worker and also a good layout man that knows how to handle men. Have had 25 years' experience at the trade. Want situation as working foreman. Can go anywhere. Address—George Collins, The Morr Dell, 144 Sixth Avenue South, St. Petersburg, Florida. 6-3t.

Situation Wanted—By first-class sheet metal worker and furnace man, 25 years' experience. Can also do plumbing. Address C-35, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 5-3t.

Situation Wanted—By tinner and furnace man. Can do pump work and also help in hardware store. State wages in first letter. Address C-48, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Ill. 7-3t.

Situation Wanted—A-1 sheet metal worker on cornice skylights and ventilation. Middle age. Will go any place. Can take charge of shop if required. Address—D. C. C. 1524½ Broadway, Mattoon, Illinois. 6-3t.

Situation Wanted—Tinner and furnace man with 25 years' experience; west or southwest preferred. State wages in first letter. At liberty soon. Address C-44, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t.

Situation Wanted—By a first-class tinner and furnace man who also does some plumbing. Fifty years of age, married and good habits. Address **Guy Hasty, King City, Missouri.** 5-3t.

TINNERS' TOOLS

For Sale—1 No. 561 Pexto setting down machine, \$23.00, 1 No. 921 Pexto double seaming stake, \$18.00; 1 No. 932 Pexto B. E. Square stake, \$6.50; 1½ Doz. 2" Corrugated Cut-offs (Perfection), \$2.50 per doz.; 1½ doz. 3" Corrugated Cut-offs (Perfection), \$3.60 per doz. The Pexto Machines are new and never have been used. Address—C-49, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 8-3t.

For Sale—A bargain. A 4-foot J. M. Robinson steel cornice brake, capacity 14 gauge and lighter. Brake cost \$225.00; as good as new, has no nicks, and is in perfect condition. First offer for \$65.00 gets it. It is a fine tool for any sheet metal or radiator shop. Address **Acme Sheet Metal Radiator Shop, Parkston, South Dakota.** 7-3t.

For Sale—One P. S. & W. Square shears 30"; one small beading machine; one large burring machine; one setting down machine; one 30" slip roll. All machines in first class condition. Cost \$200.00 new. Will take \$65.00 for the lot. Act quick. Address—Joseph Sandman, Cape Girardeau, Missouri. 8-3t.

For Sale—16 foot Warren shelving with Ladder Oak finish. Excellent condition; 1 10 ft. double Truss Cornice Brake; 1 surplus lot tinner's tools. If interested send for list and prices. **John F. Cartwright, Bowling Green, Ky.** 8-3t.

For Sale—Good 10-foot used foot power squaring shear. If interested address C-45, care **AMERICAN ARTISAN**, 620 South Michigan Avenue, Chicago, Illinois. 7-3t.

Wanted—To buy a used 30" bar folder. Must be in good condition. Address—Williams Brothers, Farmer City, Illinois. 8-3t.

TINNERS' TOOLS

Wanted—To buy a good set of tinner's tools including 8 ft. brake; state condition of tools, and give list of what you have. Also best cash price. J. S. Raymond & Son, Lena, Illinois. 6-3t

BOOKS

Kinks and Labor Savings Methods for Sheet Metal Workers, Vols. 1 and 2—Volume I. There are hundreds of ideas and expedients, all contributed by sheet metal workers throughout the country, illustrated by cuts and original drawings. Cloth bound. Size 4½x7 inches. Price \$1.00. Volume II written in same popular style as Volume I. Places at your disposal a comprehensive collection of ingenious ways of executing many practical tasks in much more simple way than if done in the regulation manner. Also contains special articles on Automobile Repairing; gives a very practical series of illustrated directions on erecting metal ceilings with ten guide rules which will save time, trouble and expensive mistakes. Price \$1.00. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

Exhaust and Blow Piping, by Hayes—Exhaust and Blow Piping has had an unusually big demand. A fresh supply is now off the press and is in our hands for immediate delivery. It has an invaluable treatise on the planning, cost, estimation and installation of fan piping in all its branches giving all necessary guidance in fan work blower and separator construction. 159 pages, 5x8. 51 figures. Cloth. \$2.00. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

Manual of Automotive Radiator Construction and Repair, by F. L. Curfman and T. H. Leet—Anyone interested in Radiator Repairing will find the 185 pages of practical instructions and the 120 illustrations showing actual construction and repairing a big help. In a condensed manner some four to five thousand answers to questions are given. It is thoroughly practical as both authors are men of wide experience in this work. Printed in large, easy to read type. Measures 5½x9 inches. Price \$2.50. Order from Book Dept., AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

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HUBERT E. PECK
Patent Attorney
Barriester Bldg., WASHINGTON, D. C.

WANTED

Draftsman who understands design and layout of warm air heating plants in accordance with Standard Code by furnace manufacturer south of Ohio river. Position gives man who qualifies excellent opportunity to connect with high-grade company. Address W-6, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 5-3t

WANTED

Two experienced heating salesmen for Chicago trade. Must know boilers and furnaces. Splendid permanent opportunity for hard workers. Replies held confidential. Address C. H. B., 608 Hearst Bldg., Chicago, Illinois. 7-2t

SPECIAL NOTICES

STATE REPRESENTATIVES WANTED

to handle complete line of furnace fittings for one of the oldest and best established firms in the country.

We want men in all the Northern, Southern and Western States to represent us either exclusively or in conjunction with some hardware or sheet metal line.

Experience in furnace fittings not necessary, but acquaintance with trade would be very helpful. Give full details in first letter.

Write at once to W-8, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 8-1t

FURNACE SALESMEN

We have three good territories open for experienced furnace salesmen, interested in multiplied opportunities for sales, backed by complete re-sale co-operation.

We need a good man for the state of Nebraska, one for Missouri and another for the states of Kansas and Oklahoma.

The line is the most complete in the heating equipment field, established nearly three-quarters of a century, including coal and gas-fired warm air furnaces and boilers, registers and furnace fittings, with an attractive list of specialties.

The opportunity is immediate. Write in complete confidence to W-7, care AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois. 8-tf.

Wanted:—Furnace Supply Jobbers and side line salesmen to sell INSALUTE (Furnace Sealing Paint). The greatest thing ever offered to furnace installers to prevent gas and dirt from getting into the living rooms. Now used by hundreds of furnace dealers. We also manufacture white porcelain stove leg rests. Write for prices and literature.

Technical Products Company
East Liberty Pittsburgh, Pa.

FOR SALE—PATENT ON NEW DESIGN STEEL FURNACE

MANUFACTURERS will be interested in the design of this steel warm air furnace which has features that—

- cool the grate bars
- preheat the air
- save fuel by reason of efficient and practical means of causing more complete combustion.

THE patented features of this furnace are such that they can be used on furnaces now manufactured.

For full information and copy of PATENT PAPERS, address J. A. M. care of AMERICAN ARTISAN, 620 S. Michigan Ave., Chicago, Ill.

SPECIAL NOTICES

BRANCH MANAGERS AND SALESMEN WANTED

Two (2) worthwhile opportunities await men with successful heating sales records. Drawing account and bonus.

Vacancies at or within 200 miles of Chicago. Mail full details of your experience and qualifications.

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OPPORTUNITY for SALESMEN

Experienced in selling the more progressive heating equipment dealers.

The company is an old established, well rated firm manufacturing a complete line of the better grade steel cast iron furnaces.

Due to increased production facilities and an enlarged sales policy, heretofore uncovered territory is now made available.

Compensation will be commensurate with ability on a strictly commission basis.

Applications from salesmen who are now selling supplies and equipment to the dealer trade and who desire an added line will also be considered. The members of our organization have been advised of this advertisement.

In your reply give a brief history of your selling experience, territory covered, and the products you are now selling.

Address Box 666
AMERICAN ARTISAN

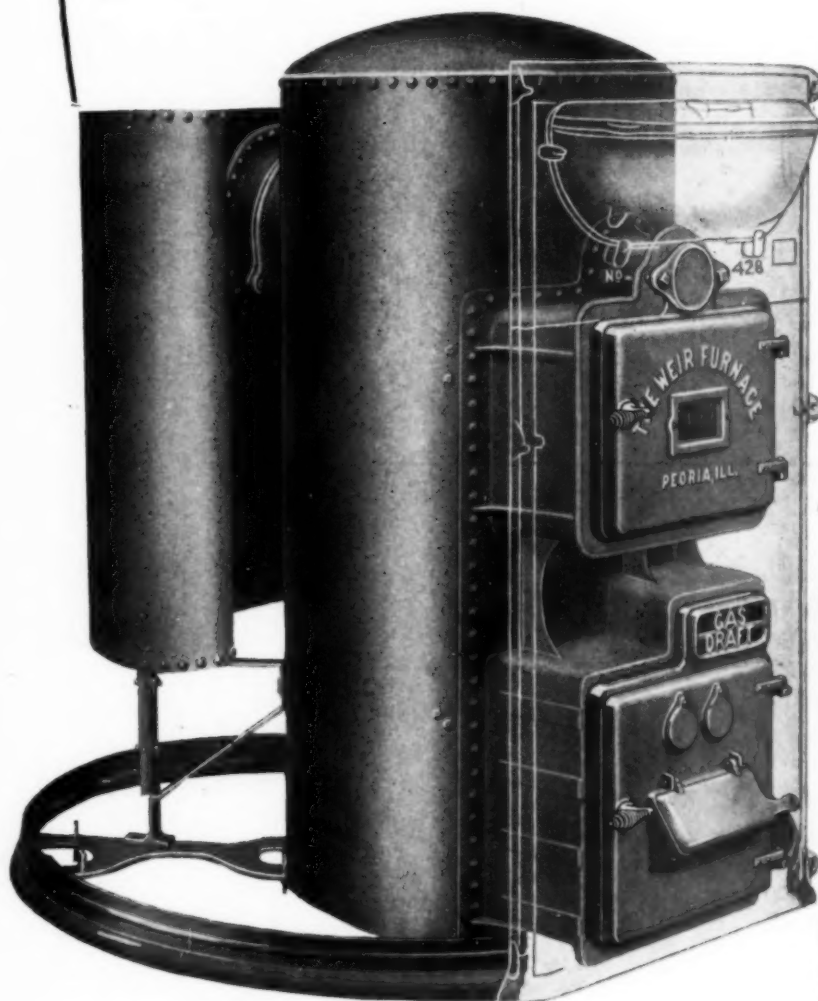
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BETWEEN quantity and quality, we choose the latter—in other words, we prefer to devote our attention to careful, individualized workmanship, rather than the production of great numbers, regardless of quality. From this, however, it is not to be understood that WEIR does not rank with the leaders in production, but more important is the fact that *it leads in quality*

WE know the potential possibilities in the warm air heating field for *quality* furnaces, but realize that such merchandise calls for careful, honest selling by the better class of dealers. If you count yourself as belonging to this class, or want to find a place for yourself in this select group that is distinguished by better business and bigger profits, you should know all about the WEIR Agency proposition NOW.



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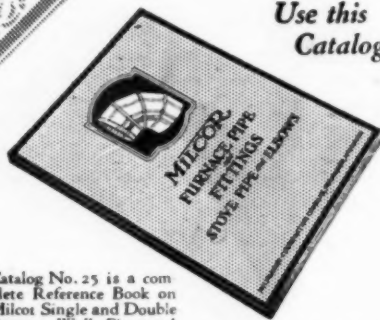
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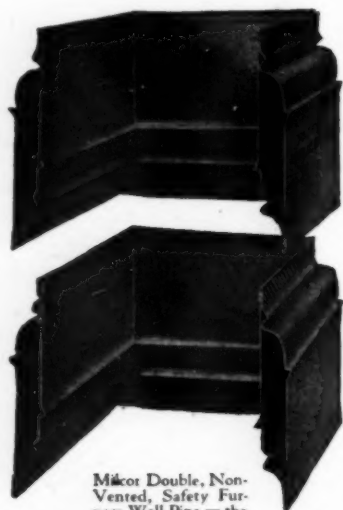
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Milcor Double, Non-Vented, Safety Furnace-Wall-Pipe—the most efficient and practical Double Wall-Stack known.

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Combination of Milcor No. 42 Stackhead with Extension and Milcor No. 199 Boot.



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It pays to handle this simplified line. You can render better service, give your Trade higher quality and more practical equipment, carry less stock—and make more money. Investigate the Milcor Line.

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